DOCUMENT RESUME

ED 233 120 UD 023 049

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TITLE Lawrence Children's Health Project. A Demonstration of a Collaborative Brokering Model and School-Based EPSDT. Final Report.
INSTITUTION Abt Associates, Inc., Cambridge, Mass.; Merrimack Education Center, Chelmsford, Mass.
PUB DATE 6 Aug 82
NOTE 115p.
PUB TYPE Reports - General (140)

EDRS PRICE MF01/PC05 Plus Postage.
DESCRIPTORS Cooperative Programs; Delivery Systems; *Demonstration Programs; Disadvantaged; Elementary Education; Health Needs; *Health Services; Immunization Programs; *Medical Care Evaluation; *Outreach Programs; *Preventive Medicine; Program Descriptions; Program Evaluation; *School Health Services; School Role; Spanish Speaking; Urban Schools
IDENTIFIERS *Lawrence Childrens Health Project MA

ABSTRACT

The Lawrence (Massachusetts) Children's Health Project (LCHP) was a demonstration project consisting of an alternative approach to providing health care to children, many of whom were not receiving health services. The project was carried out by the Merrimack Education Center and focused on a school-based model for Early Periodic Screening, Diagnosis, and Treatment (EPSDT). A total number of 2,235 students (60 percent of them Hispanic) from 6 of the 13 elementary schools in Lawrence participated in the project, which consisted of two components: the health service system, and a component which performed administrative functions necessary to support the health service system. Data were collected on the health history of each student, and teachers' assessments of target childrens' school functioning were obtained. Referrals and follow-ups were conducted through family health workers. An evaluation of the project indicates that the LCHP: (1) provided services which met appropriate standards of quality with appropriate follow-up; (2) integrated and coordinated existing and newly established health care services; (3) increased the responsiveness of provider (and consumer) organizations to the needs of the target population; (4) provided cost effective services; and (5) developed a replicable model of collaborative brokering for service delivery. This report provides a detailed description of the program's services, administrative aspects, and its results; and outlines recommendations for the future. (AOS)

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LAWRENCE CHILDREN'S HEALTH PROJECT

A Demonstration of a Collaborative Brokering Model and School-Based EPSDT

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UD 023 049

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A Final Report Prepared for the Merrimack Education Center
August 6, 1982

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PREFACE

The present report represents a final phase of contractual work between the Merrimack Education Center (MEC) and Abt Associates Inc. regarding the Lawrence Children's Health Project (LCHP). The intent of this report is to concisely summarize the LCHP, to make recommendations for the future, and to outline implications for child health policy. To this end many LCHP reports were reviewed, as were external evaluations of selected aspects of the project. This report summarizes information from those reports, providing an overall description of the collaborative brokering model and its implementation as the LCHP in a school-based EPSDT demonstration.

The entire staff of MEC and the LCHP have been most cooperative throughout our association. Of special note in this regard are Drs. Richard J. Lavin and Jean E. Sanders at MEC and John Hess at the LCHP, who has been most tolerant of our imposition and who reviewed a draft of the report. Dr. Melvin Levine of Boston Children's Hospital Medical Center has provided expert medical expertise throughout and a needed clinical perspective on some issues. Dr. Donald Meals provided valuable discussion of project implications. The manuscript was typed by Patricia McMillan. Special thanks are extended to all of the above for their contributions. Finally, appreciation is expressed to the children of Lawrence, Massachusetts, whose cooperation was the basis of the LCHP and whose health we hope was improved thereby.

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EXECUTIVE SUMMARY

The Lawrence Children's Health Project (LCHP) was a demonstration of an alternative appproach to providing health care to children, with particular focus on a school-based model for Early Periodic Screening, Diagnosis and Treatment (EPSDT). The LCHP was carried out in Lawrence, Massachusetts by the Merrimack Education Center (MEC).

The Concept of Collaborative Brokering of Health Services and the History of the LCHP

Within the context of an urban environment, where many children were not receiving legally mandated health screenings and services and available services were fragmented, MEC collaborated with state and local agencies and providers to initiate the LCHP. With the overall goal of improving health services for children, the project selected a strategy of establishing collaborative relationships with other organizations as a means of brokering health services. The brokering aspect of the model refers to the function of centralized matching of services to the needs of individuals and groups. The collaborative brokering approach also provides integration of the fragmented services usually obtained through categorical programs. Such a model should have considerable potential for increasing the cost-efficiency and effectiveness of health care services.

MEC had successfully applied the collaborative brokering approach previously, providing education and information services to surrounding school districts. It was apparent that many aspects of such an approach that

had benefited education were generally applicable to provision of health services for children. Moveover, because the schools were to play a critical role in the collaborative approach, it was important to consider nontraditional models of health services that would be appropriate for school involvement.

Although educators traditionally have had little concern with health services, several legal mandates have pushed schools toward concern with children's health. Federal and state laws concerning special education and the handicapped require health and developmental screening and special services. School health regulations require monitoring of selected health services at selected ages. Relevant federal legislation for Medicaid-eligible children requires regular preventive and curative services through the Early Periodic Screening, Diagnosis and Treatment Program (EPSDT). Because of these legislative requirements, and because schools provide an excellent point of access to children, a school-based model of integrated health services for children is especially appropriate.

In conjunction with the Lawrence Public Schools and through the Massachusetts Department of Public Welfare (which administers state EPSDT), MEC made application to the Health Care Financing Administration for a grant to support the demonstration in Lawrence. Its main focus would be to provide school-based EPSDT services and to integrate and broker comprehensive health services for all children in participating schools, using a collaborative approach. The LCHP conceptualized five specific objectives (LCHP, 1982):

1. Design and implement a contracting brokering mechanism operating through a collaborative, that will interface local schools and medical service providers, and promote co-operation to assure the EPSDT requirements are being satisfied.

2. Provide access to special education, health, and ancillary services through a school initated single intake, evaluation, and case management system for all children in the project area.

3. Design and implement a management information system for (a) case management records; and (b) billing procedures.

4. Design and implement a comprehensive education program for children, parents, local school principals, physicians and related health professionals, and others involved in the demonstration to inform them about the goals and operation of the project, to instruct them regarding their individual roles in the proposed system, and to educate them regarding health and health care.

5. Evaluate the effectiveness of the project and disseminate the results of the evaluation, along with the other project materials, throughout Massachusetts and the nation.

Major Program Elements

The major program elements of the LCHP are subsumed under two principal organizational components--the health service system and a component which performs ad-

ministrative functions necessary to support the health service system. The health service component performs enrollment, initial data collection, screeening, referrals, and follow-up of problems identified. The support component administers training of school staff members, billing, and the management information system (MIS). The various functions of the two components interact throughout the course of a client's involvement in the project.

Six of the 13 elementary schools in Lawrence participated in the project. Between 61 and 96 percent of the student populations of these schools was enrolled in the LCHP, with an overall enrollment of 81 percent. This comprised a total of 2235 children enrolled in the project. Initial data collection included a health history and a teacher's assessment of the target child's school functioning. Screening included a physical exmaination by a nurse practitioner, selected laboratory tests, and an assessment of neurological and motor development. Overall, 2189 screens were performed on 1982 children. This number includes 207 rescreens carried out the year after the initial screens. The number of children screened constitutes 89 percent of the children enrolled in the LCHP, and 72 percent of all children in the participating schools.

Referrals and follow-ups were conducted through family health workers, who assisted families in identifying appropriate providers and in making appointments and necessary arrangements to obtain suitable care (e.g., transportation, day care). Training activities focused primarily on staff members, although there were efforts to develop health curriculum packages and some community outreach education.

To make use of existing funding sources, the LCHP organized a billing component to obtain reimbursement for Medicaid services. This was possible because the LCHP obtained approval to be considered as a alternative provider for EPSDT. Through this mechanism, screening services provided by the LCHP were reimbursed at Medicaid rates from the Massachusetts Department of Public Welfare. Examinations of children not eligible for Medicaid were paid by grant funds. A microcomputer-based management information system was established to accomodate individual records and to facilitate case management.

Detailed analyses describing important characteristics of the participating children were carried out for 650 elementary children attending three schools considered to be representative of the entire project population. These results and the findings on children are based on initial examinations of these children during the first full year of program operation.

Description of the Population

Over half of the children (60%) were of Hispanic origins, and more than one-quarter (29%) were white. The balance of the children were from varied ethnic backgrounds. The children's predominant family characteristics were those associated with poverty. The majority of children (62%) came from single-parent households that had moved more than once in the previous three years. Forty-two percent of mothers had an eighth-grade education or less.

Approximately half of the children came from families supported by employment, and about one-quarter of the children's families were supported by welfare.

Over one-sixth (18%) of the children participating in the LCHP were in families for whom no form of financial support was reported. Almost all children (89%) received free or subsidized lunches at school and most (65%) received AFDC and Medicaid support and services. About one-quarter (26%) had Blue Cross or other family health insurance. Clearly, the LCHP population must be considered as economically disadvantaged, and characterized by high unemployment and considerable dependence upon welfare and other public assistance.

Project Accomplishments and Selected Findings

Many of the project accomplishments are best defined in qualitative or task-oriented terms rather than quantitatively. Among the accomplishments that signal success on the part of the project, the LCHP:

- established alternate provider status for EPSDT billing and services;
- achieved high rate of compliance with state regulations for immunization;
- obtained permission for direct Medicaid reimbursement for the neuro-developmental examination;
- contracted with the Lawrence Public Schools to oversee the school health program for the city; and
- screened preschool siblings of the enrolled population during summer vacation.

When five criteria specific to the collaborative and brokering mechanisms were assessed in detail, the project demonstrated success in:

- providing services which meet appropriate standards of quality with appropriate follow-up;

- achieving integration and coordination of existing and newly established services;

- increasing the responsiveness of provider (and consumer) organizations to the needs of the target population;

- providing services cost-effectively; and

- developing a replicable model of collaborative brokering service delivery.

Findings on children resulted from analyses of the sample of children described above. As a group, the LCHP children were not well integrated into the existing health care systems. Thirty-one percent of the children reported that they had no routine well-child care, and 33 percent reported no regular dental care. Rates of children fully immunized for polio and DPT at the time of their initial visit were considerably below state averages.

Based on data regarding size and maturity at birth, LCHP children were characterized by higher than expected rates of low birthweight and gestational prematurity. Both of these are risk factors for subsequent morbidity and mortality. Regarding postnatal growth status, LCHP children tend to be slightly shorter but slightly heavier than U.S. norms. There is no indication, however, that this population is at risk of obesity.

By combining a wide range of findings and family characteristics, four risk categories were defined: Medical Care risk, Demographic risk, Medical History risk, and Physical Findings risk. The interpretation of "at risk" in this context is that a child (or group) so classified has a constellation of findings that indicates an increased probability of health consequences related to the domain specified. Over 40 percent of the children were considered at risk because of inadequate medical care, and over one-third (37%) were at risk because of demographic characteristics. At least 6 percent of the children were at risk for more than one set of factors.

Almost all children (93%) were determined to have at least one health problem. The most frequent problems had to do with inadequate health care (64.4%) and dental problems (31.4%). Seventy-nine percent of children had problems that required referral to someone other than parents. Analyses showed that occurrence of problems was related to many specific family and health care characteristics.

Major Conclusions

Conclusions were drawn across aspects of the project, with the intent of providing broad applicability to brokering and to other important aspects of child health.

1. There are communities of children in Massachusetts (and elsewhere in the U.S.) who need improved health services.

2. There is a need for brokering or some other coordination of services to provide systematic screening and referral of children and to assist families in obtaining health services.

3. The LCHP collaborative brokering approach has been successful in increasing access to EPSDT services for both Medicaid-eligible children and other children.

4. The school is an effective site for reaching children and for providing and brokering health screening to large numbers of children.

5. A collaboration among existing agencies, organizations, and providers suitable for brokering health care for children is feasible and has been established.

6. The brokering model can (must) be adapted to local needs and resources.

7. Brokering special health needs of groups of children may provide special services generally unavailable to individual families and children.

8. The LCHP collaborative brokering approach has improved health services for children through increased comprehensiveness, more efficient utilization of existing services, and integration and coordination of new and existing services.

9. A project support team of nurse practitioner and para-professional family health worker appears to be a successful approach to providing families with the assistance they need.

10. LCHP has demonstrated that collaborative brokering of children's health care can be coupled with school-based EPSDT services as a realistic alternative to conventional models of health service delivery for children.

Recommendations for the Future

Seven recommendations are presented and discussed in terms of substantive directions for the future, rather than specific operational adjustments to the LCHP.

1. Selected program elements from LCHP should be replicated elsewhere.

2. A schcol-based brokering model should be designed and implemented in a way to accomodate rigorous evaluation of the project.

3. An in-depth study of the internal mechanism of state and local government dealing with EPSDT/Medicaid and other child health services should be carried out to determine agency restrictions and politics pertinent to establishing local brokering organizations for children's health services.

4. A mechanism should be developed for the model to provide self-sustaining financial support for project administration, case workers, comprehensive care, and maintain a surplus.

5. A system of pre-screening or triage should be considered to provide basic services for all children but reserve the most specialized services for those in need.

6. Through organizational collaboration, a mechanism should be established for incorporating project findings into planning future directions for schools, school health, and community services.

7. Educational and training activities for teachers, parents, and community leaders should receive considerable attention.

Policy Implications for the Future

Based on the LCHP experience and conclusions drawn, seven major implications for child health services are presented and discussed.

1. The collaborative brokering model offers a mechanism for increasing efficiency of existing services.

2. The collaborative brokering model may offer a mechanism for increased responsiveness to local health needs and for formalized communication channels with state and regional officials.

3. Widespread collaborative brokering of child health services may demand some changes in local and state government agencies.

4. The collaborative school-based EPSDT model has implications for reordering school health.

5. The school-based model provides a source of direct access to families for preventive care.

6. The existence of a controlled, systematic approach for providing preventive health services to large numbers of children may lead to acceptance of these services for reimbursement by private insurance carriers.

7. The collaborative brokering, school-based model is a potential mechanism for providing preventive health and comprehensive health services to nearly all children of school age.

Chapter 1
BROKERING HEALTH SERVICES THROUGH THE EDUCATIONAL COMMUNITY

To assure that health services were available to children in Lawrence, Massachusetts, the Merrimack Education Center (MEC), in conjunction with regulatory, reimbursement, and provider agencies, initiated the Lawrence Children's Health Project (LCHP). Although elements of a health service delivery system existed, through which services were paid for and delivered, many children in Lawrence were not receiving legally mandated screening and services, and continued to have untreated health conditons. Given this context, the project selected a particular strategy with which to meet its goal--the strategy of forging collaborative relationships with other agencies as a means of brokering health services. The project was undertaken by MEC, a regional educational services center serving the Merrimack Valley, for implementation in the Lawrence Public Schools.

This chapter consists of two parts: first, a description of the conceptual base underlying the collaborative effort and brokering strategy; and second, a discussion of the impetus within the education community for providing health services through the schools.

The Collaboration and Brokering Strategy

The choice by the LCHP of a strategy for intervention was based on two key perceptions: that a collaborative approach would be useful in an environment in which many organizations already functioned; and that a brokering agency entering the service delivery system could increase the quantity and quality of services, as well as the

consistency with which services were delivered. As defined by the LCHP, a collaborative is a community that shares and develops resources to meet the needs of its members. Two trends in the organizational environment of the late 1970s and early 1980s have encouraged the development of such collaborative relationships. First, new financial pressures are requiring that costs be reduced. Because organizations do not wish to sacrifice the level or quality of services, they are under pressure to seek new methods of maximizing their effectiveness. Second, the proliferation of provider agencies, legislative initiatives, and funding sources has resulted in a categorical service delivery system that is increasingly fragmented. Collaborative relationships are seen as a way to improve the service delivery system and reduce fragmentation without necessarily increasing the number of organizations involved. For these reasons, the collaborative base is a possible linchpin in program strategy.

In tandem with the selection of a collaborative approach, the LCHP chose to adopt the role of broker. Brokering, to this project, is a mechanism that links clients with needs to service providers with resources to meet those needs. Service delivery through a brokering mechanism may address the needs of groups of clients in the aggregate--for example, the need of certain minority groups for information on high blood pressure--or it may be concerned with meeting the needs of individuals. In the latter case, the broker may seek, for example, to obtain dental care for a child with caries, or to obtain specialized treatment for a rare clinical condition.

MEC had previously used the collaborative brokering approach in the delivery of educational services. Its effectiveness as a means of improving school programs had

been apparent in a number of ways. The approach served to:

- improve knowledge of and utilization of resources by school personnel;
- increase available resources through bartering and exchange, in an environment of fixed financial resources;
- reduce costs by facilitating planning by member schools and by aggregating demand to permit service delivery on an economically efficient scale;
- spread costs and facilitate exchange because member schools could, through the broker, share the cost and use of such new resources as computer time and curriculum packages;
- streamline the delivery of resources to member schools by managing their shared usage;
- distribute resources equitably to handicapped and minority students, through the planning capacity of the central broker and its network for service delivery; and
- increase communications through the pivotal location of the broker in the service delivery system.

It is clear that these principles may apply as well to health services provided to children through the schools as to education services per se. A more complete dis-

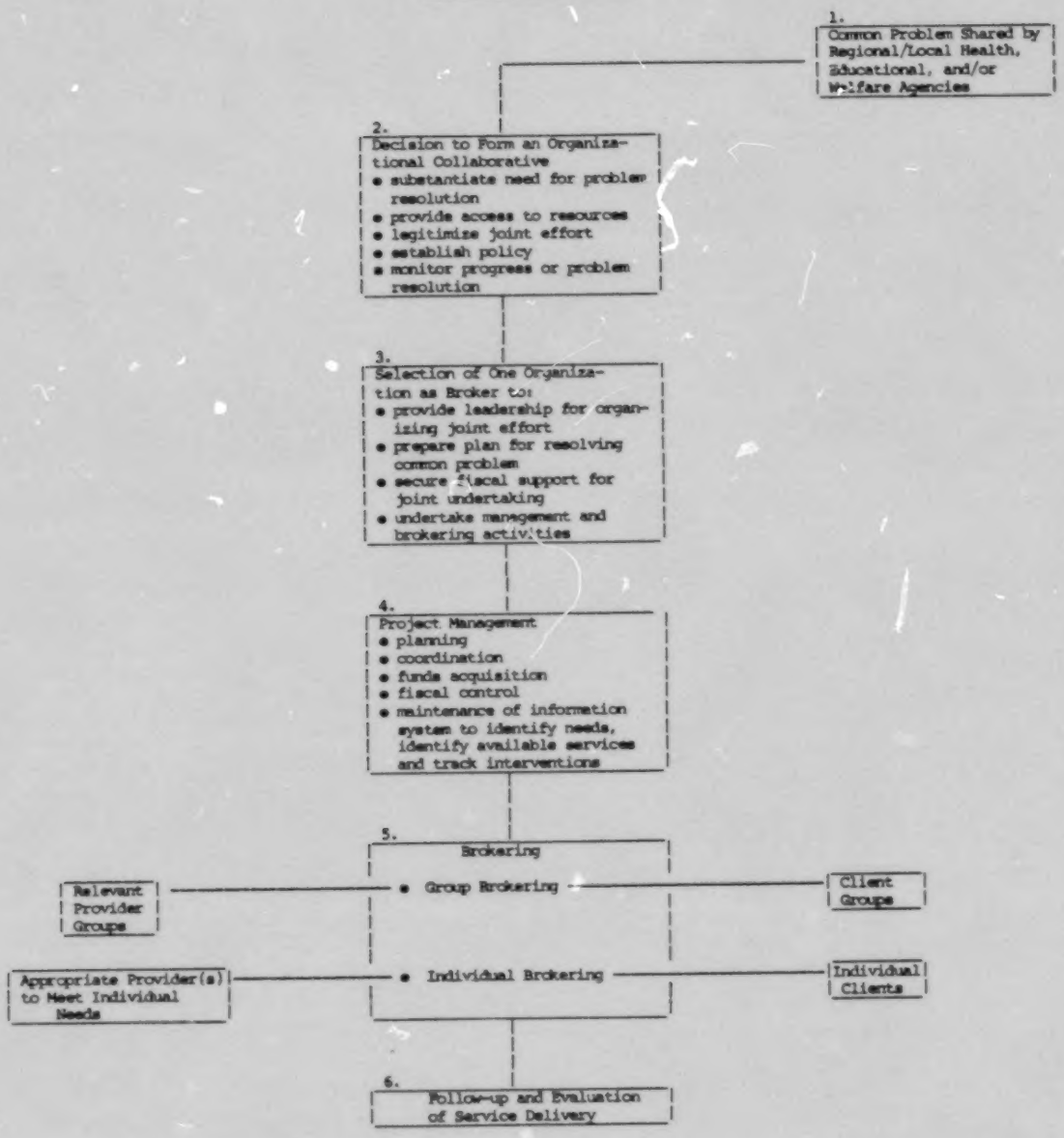
cussion of these purposes is contained in the Monograph on the Brokering Strategy (Merrimack Education Center, in press).

The brokering agency thus enters the forum of providers and consumers and changes the traditional formula of supply and demand. First, demand becomes larger and more cohesive as the broker identifies individuals or organizations with needs and puts them in contact with each other. This process of identifying needs enables demand to be anticipated, because the scope of the market for services is known. The supply of resources is equally modified, as a social/political process is put in place that will create an effective exchange system and bring about appropriate responses from resource organizations to needs not previously recognized.

The process by which a collaborative is forged consists of a number of steps. The collaborative does not begin fully developed; instead, it must be established where clients are known to have needs and where several agencies have concurrent responsibility for addressing those needs. As shown in Figure 1-1, the LCHP has identified seven components of the development of the collaborative, as follows. 1) A problem shared by regional or local health, educational, or welfare agencies must be identified, and it must be recognized that the problem cuts across provider agencies. 2) The decison must then be made by the potential collaborators that a joint effort is warranted and legitimate, and that the organizations will cooperate and commit resources to the endeavor. 3) Subsequently, one organization must be identified as the broker who will lead the effort. 4) This brokering agency then melds the activities of the collaborators through planning, fiscal coordination and information management, assembling management staff as

Figure 1-1

Scheme Depicting Collaborative Approach to Problem Resolution Employing the Concept of Organizational Brokering


1.
Common Problem Shared by Regional/Local Health, Educational, and/or Welfare Agencies
2.
Decision to Form an Organizational Collaborative
• substantiate need for problem resolution
• provide access to resources
• legitimize joint effort
• establish policy
• monitor progress or problem resolution
3.
Selection of One Organization as Broker to:
• provide leadership for organizing joint effort
• prepare plan for resolving common problem
• secure fiscal support for joint undertaking
• undertake management and brokering activities
4.
Project Management
• planning
• coordination
• funds acquisition
• fiscal control
• maintenance of information system to identify needs, identify available services and track interventions
5.
Brokering
Relevant Provider Groups
• Group Brokering
Client Groups
Appropriate Provider(s) to Meet Individual Needs
• Individual Brokering
Individual Clients
6.
Follow-up and Evaluation of Service Delivery

[a]Adapted from MAGI (1981).

needed. Brokering itself--the matching of needs with resources--is carried out on two levels: 5a) group brokering connects groups of clients with provider agencies, and 5b) individual brokering provides specific services to individuals as needed. Rarely will there be an immediate, perfect match; the broker must instead evaluate a range of available services and select one which may be adapted to the client's needs, or encourage development of new services. 6) The final elements in the brokering process are follow-up and evaluation of the service delivery mechanism, assuring that services were provided, and that problems were resolved or continue to be treated or monitored.

Through its activities of management and matching, the broker is able to provide services more effectively and efficiently. That is, clients' needs are routinely assessed and groups with common problems are identified. Systematic plans are made to remediate these problems by matching resources to needs. This approach both streamlines logistics and maximizes potential economies of scale in service delivery.

The Educational System and the Provision of Health Services

Because of the unique position of MEC, an educational service center, in initiating the LCHP, a broker/provider of health services, it is important to examine the impetus within the education community for involvement of the schools as agents of health service delivery. There are two primary motivations for this involvement: First, school sites are an appropriate access point for the provision of health screening. Second, and perhaps more compelling as a motivating force, is the set of legal mandates impinging on schools and pushing them toward concern with children's health needs.

For a number of reasons, school facilities are ideal as sites for the delivery of health services. Obviously, they provide a central location in which large groups of children can be served. Recordkeeping and updating are routine elements of school administration. Consequently, if large-scale interventions are planned--for example, vaccination for influenza--logistical preparations and subsequent documentation may be kept to a minimum. Furthermore, where schools draw from intact neighborhoods, the children who attend may well come from similar backgrounds and share common needs. Thus, service provision and educational programs can be tailored to their shared needs and interests. Programs for sickle cell screening and education, for example, might be planned in a school serving a largely black population. Likewise, through the school-age child, other family members may be contacted. Parents may become involved in programs offered at the child's school, or the school-age child may be the avenue though which preschool siblings are contacted and subsequently screened and immunized. For these practical reasons, the school is particularly well suited for delivery of health screening, if bureaucratic demands and constraints permit.

The present legislative context is also conducive to school involvement in health services. Provisions of three major federal and state initiatives require that health screening, treatment or immunization be provided to, or obtained by, school children at intervals during their schooling. Chief among these is the Early Periodic Screening, Diagnosis and Treatment Program (EPSDT), included in the 1967 Amendments to the Social Security Act. This program has been designed to ensure that Medicaid-eligible children receive preventive screening services, with treatment mandated for any problems identified. As a result, states are required to fund and provide screening services,

either directly or contractually, and to implement an outreach system with which to contact eligible families. In Masssachusetts the EPSDT program has adopted the name Project Good Health, and it is administered by the Massachusetts Department of Public Welfare (DPW).

The second major legislative mandate is that included in the statutes establishing the special education program. Federal laws (P.L. 93-380 and P.L. 94-142) and Massachusetts law (Chapter 766 of the Acts of 1972) spell out the rights of the handicapped and the responsibilities of the schools in educating these students. Among its provisions, Chapter 766 provides for preschool health and developmental screening, physical examination of school-age children prior to preparation of an Individual Education Plan, delivery of services recommended by the CORE Evaluation Team, and yearly reassessments of children who are placed in special education programs. The special education program is administered by the Massachusetts Department of Education and the public school systems. Most health services provided under its mandate, however, may be reimbursed by Medicaid and then are governed by the latter program's procedures.

The school health program is the third legal mandate requiring school involvement in children's health. Though schools are not mandated to provide services, they must monitor student compliance. Each child in the first, fifth, and ninth grades and each entering student must have a record of a physical examination. Compliance with requirements related to immunizations, vision and hearing screens is also monitored.

The characteristics of the mandated programs and services are shown in Table 2-1. Clearly, the regulations

Table 2-1

Major Characteristics and Services of Three Legislatively Mandated Programs: EPSDT, Special Education, and School Health

Characteristic	EPSDT	Special Education	School Health
Eligible Children	Medicaid eligibles under age 21	Preschoolers and handicapped students	All school children
Administrative Responsibility	Massachusetts Department of Public Welfare	Massachusetts Department of Education, Local Schools	Schools
Financial Responsibility	Medicaid	Medicaid, insurance, schools	Family, Schools
Mandated Services			
Health Screening	Annual or Bi-annual	Annual for Handicapped	Grades 1, 5 and 9
Developmental Screening	Yes	Yes	No
Immunizations	Yes	Yes	Yes
Vision Screen	Yes	Yes	Annual
Hearing Screen	Yes	Yes	Annual
Diagnosis	Yes	Yes	No
Treatment	Yes	Yes	No
Follow-up	Yes	Yes	No

overlap both in the populations served and in the service required. This considerable overlap and the diverse mechanisms by which services are to be provided make compliance with these regulations difficult for school administrators.

The record for compliance with these provisions, especially with those of the EPSDT, has not been good. A national review of EPSDT by the Children's Defense Fund (1977) indicated that between 22 and 26 percent of the mandated screenings were performed in 1976 and 1977. In Masssachusetts only about 5 percent of eligible children were reached in 1978 (MAGI, 1981). In 1979, the year prior to the initiation of the LCHP, only about 6 percent of the required screenings were being conducted in Lawrence by the state EPSDT program. One may invoke disorganization and lack of financial resources as factors in noncompliance. Clearly, there was a need for improved services in the Lawrence area, and this was the need that the LCHP set out to meet.

Chapter 2

CONCEPTUAL AND OPERATIONAL HISTORY OF THE LCHP

For any given community, specific characteristics of the service delivery system affect the provision of brokered health services through the school system. What were the particular elements within the community and organizations involved which led to the development of LCHP in its present form?

The Lawrence Public Schools and the school committee faced the legal mandates described above--EPSDT, Chapter 766, and the school health statutes--in an environment of insufficient existing services. In 1978, parts of the City of Lawrence had been designated as medically underserved areas, lacking an adequate number of primary care physicians for their populations. Other problems commonly facing communities in delivery of adequate services to low-income populations were also evident in Lawrence. The preventive health care needs of low-income children were not being met, and the prevalence of handicapping conditions and of problems functioning in school was greater than in higher-income groups. The thrust of the EPSDT program is to address these needs. EPSDT, as viewed by the LCHP, should be designed to improve the pediatric health status within the community through the integration of health services, education, and social services. As it developed, the program also allowed the schools to meet obligations mandated by other legislation.

The utility of basing EPSDT in the schools was anticipated by federal agencies involved in its implementation; a joint statement by the Health Care Financing Administration (HCFA) and the U.S. Department of Education

expressed the intent of these agencies to provide EPSDT services through the schools whenever possible. Thus, a school-based intervention under the auspices of MEC appeared to be a significant means of meeting the health needs of low-income children in Lawrence.

Founded in 1968, MEC had long served school districts in the Merrimack Valley as a broker of educational services and disseminator of information. The brokering strategy had been refined at MEC, prior to commencement of the LCHP, for the delivery of special education services and also for the provision of other services to member school districts. In the course of the latter effort, MEC had served as a link between school districts and resources on matters of staff development, information management and computer-assisted instruction.

To address children's health needs in the context of the service system functioning in Lawrence, MEC developed the concept of the LCHP. The program was designed to accomplish a single overarching goal: "to demonstrate and evaluate the feasibility and cost-effectiveness of an interagency approach to delivering high quality educational and health services to the city's children through a school-based local resource network" (LCHP, 1982).

Three aims were incorporated into this overall goal. The first of these was to address the needs of low-income children for preventive services: with a limited supply of primary care providers in target neighborhoods, prevention was not a priority, and problems were often neglected until they become severe enough to be noticed by parents or teachers. The second aim was to develop and implement an integrated approach to the delivery of health

services, with a single intake point for children and provision of a comprehensive range of screening and referral services at one location. The third aim was to implement the model through a collaborative brokering mechanism, as described in Chapter 1. Rather than establishing yet another direct service organization with limited mandates and funding, a collaborative brokering strategy could maximize the effectiveness of existing service providers and funding mechanisms. The LCHP conceptualized its task in terms of five concrete objectives (LCHP, 1982):

1. Design and implement a contracting/brokering mechanism operating through a collaborative, that will interface local schools and medical service providers, and promote cooperation to assure that EPSDT requirements are being satisfied.

2. Provide access to special education, health, and ancillary services through a school initiated single intake, evaluation, and case management system for all children in the project area.

3. Design and implement a management information system for (a) case management records; and (b) billing procedures.

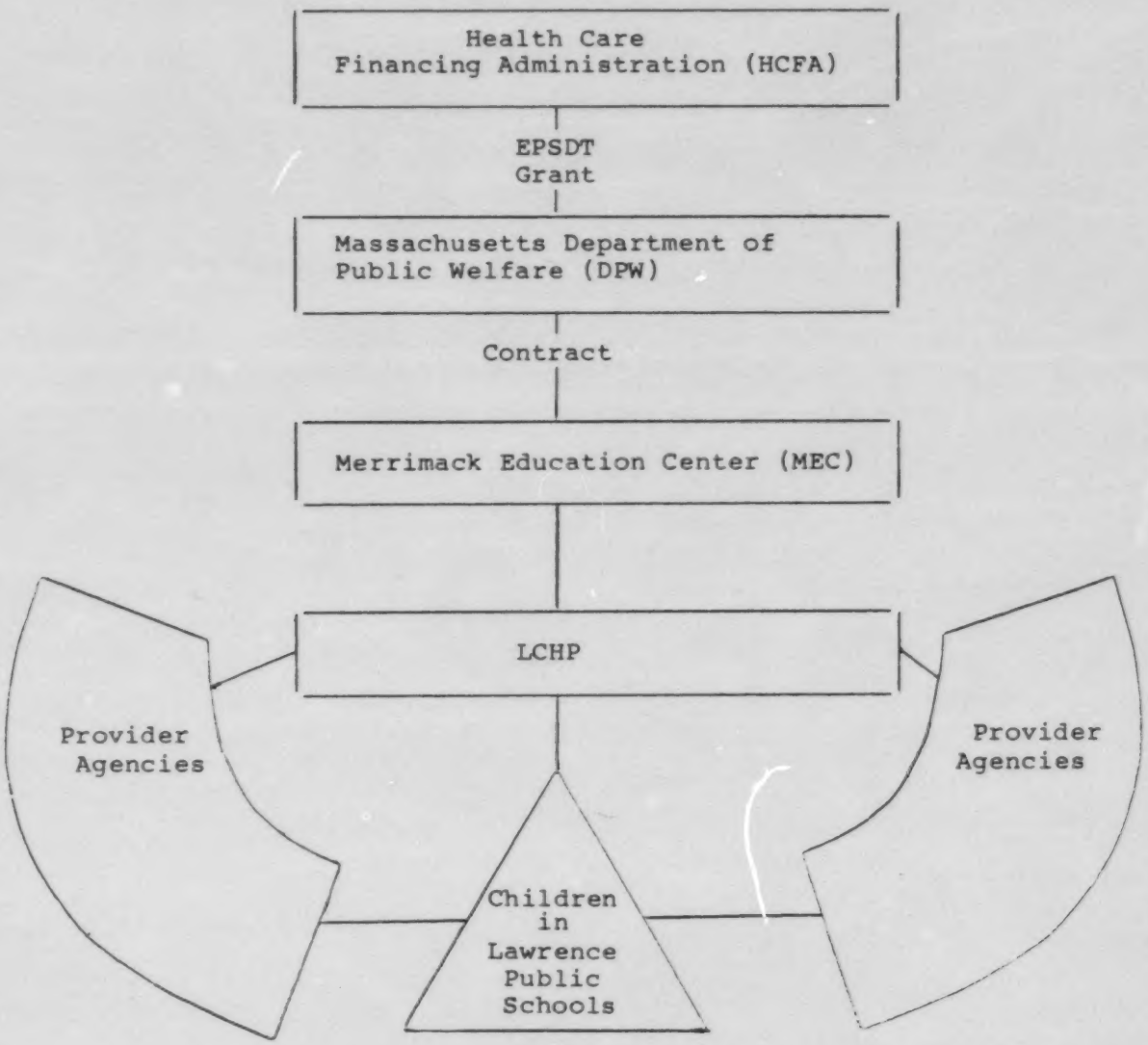
4. Design and implement a comprehensive education program for children, parents, local school principals, physicians and related health professionals, and others involved in the demonstration to inform them about the goals and operation of the project, to instruct them regarding their individual roles in the proposed system, and to educate them regarding health and health care.

5. Evaluate the effectiveness of the project and disseminate the results of the evaluation, along with the other project materials, throughout Massachusetts and the nation.

The interest of MEC in undertaking such a project coincided with interest at the state level of the Departments of Welfare and Education. Staff of these agencies were informally exploring the feasibility of developing a program by which health services for special education could be funded by Medicaid. In this context, MEC began to develop the collaborative arrangements through which the LCHP would be implemented. Although the brokering efforts of the LCHP have resulted in the forging of many contractual agreements, three initial agreements were the keystone of the LCHP's founding. First, in conjunction with the Lawrence Public Schools and the Massachusetts Department of Public Welfare, MEC made application to HCFA for funding of a demonstration program to provide brokered EPSDT services through the public schools. A grant was awarded to the DPW in October 1978. Second, MEC contracted with the state in March 1979 to launch the LCHP, and finally, in June of that year agreements were completed between MEC and the Lawrence Public Schools for provision of services to children. Agreements reached in implementing the service delivery systems include those with Children's Hospital Medical Center for the services of a consulting pediatric fellow and those with local clinics and providers to receive medical and dental referrals and to comply with state EPDST requirements and reimbursement rates. Auxiliary arrangements have also been made for extraordinary laboratory analyses, for pharmaceuticals, for optical and other specialty services, and for screening for lead poisoning and sickle cell trait. The organizational relationships of the LCHP are diagrammed in Figure 2-1.

Figure 2-1

Organizational Relationships of the LCHP



Chapter 3 describes the organizational structure that the LCHP established to achieve its goals and to perform programmatic tasks.

Chapter 3
MAJOR PROJECT ELEMENTS

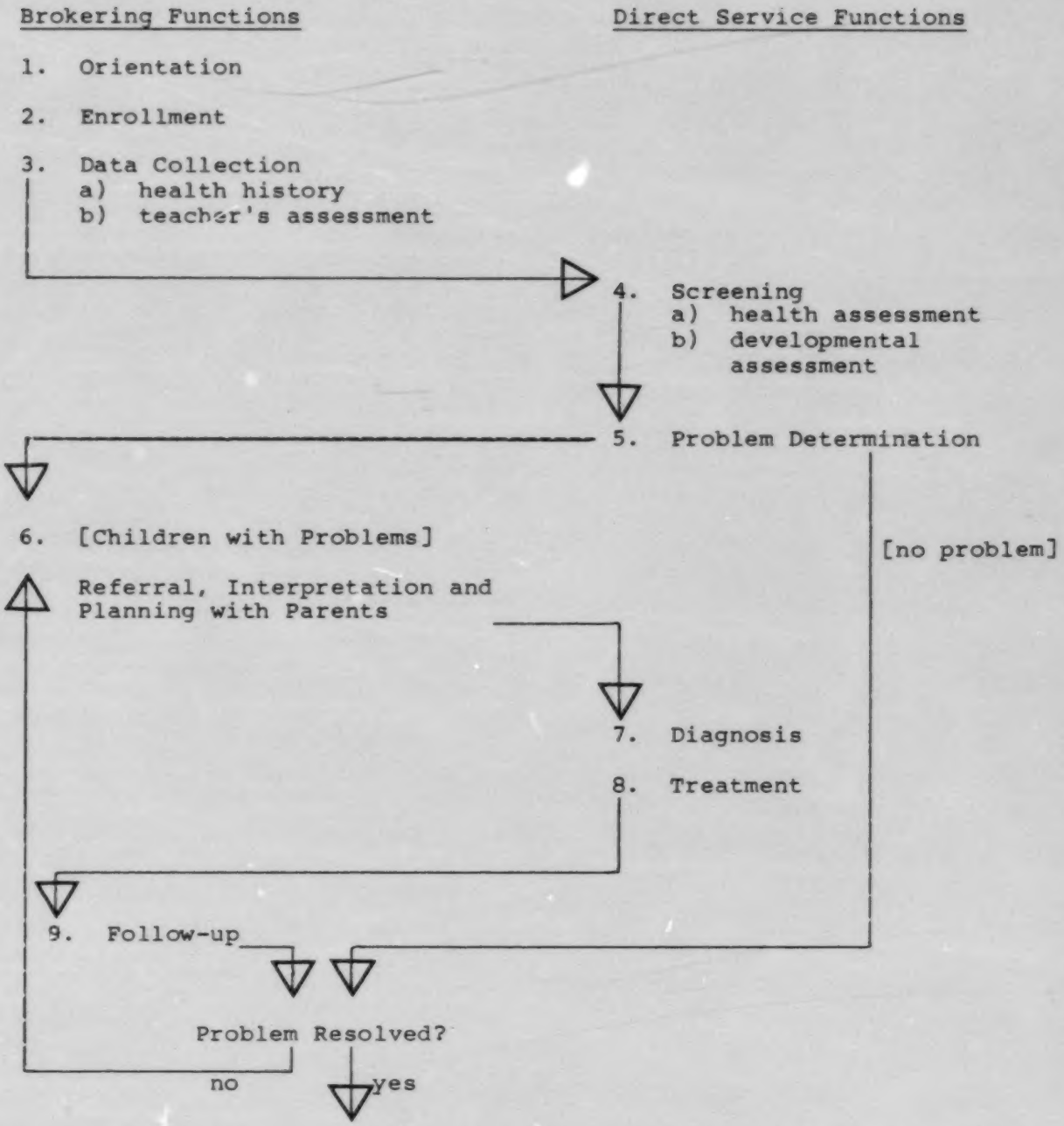
In order to deliver brokered health services, LCHP has developed two principal organizational components, the health service system itself and a component which performs administrative functions necessary to support the health service system. Each component undertakes several activities. The health service component performs enrollment, initial data collection, screening, referrals, and follow-up of problems identified. The support component administers training of school staff members, billing, and the management information system. This chapter presents a brief discussion of the purpose and activities of each element of the health service system and the administrative component.

The Health Service System

To broker the screening, diagnosis, and treatment services for children enrolled in the program, health services have been organized into a series of sequential functions; these will be described in detail below. To suggest the scope of the system, it is useful to look briefly at the movement of participants through the stages of enrollment, screening, referral, and follow-up. As shown in Figure 3-1, the LCHP delivery system comprises brokering functions and direct service functions. The brokering functions include such tasks as making a referral for treatment or planning with parents about ways to meet needs. Within the brokering functions, social services and outreach are a major responsibility. Except for recordkeeping and billing, the elements of the brokering function all

Figure 3-1

Clients' Pathway through the LCHP Delivery System



Source: LCHP, 1980.

involve communication or problem-solving with parents. The direct delivery functions are the services provided by the project--for example, health and developmental screening--and diagnosis and treatment made available through contractual arrangements.

Orientation and Enrollment

Six of the 13 schools in Lawrence were selected for the preojct becaue their catchment areas included known low-income areas of the city. Orientation activities conducted by the LCHP were designed to inform parents about the program, provide an opportunity for face-to-face contact, and obtain parental agreement to participate. High participation rates could not be assumed. The approach of the LCHP is unique and thus, clear explanation and explicit marketing of the program's services, as well as aggressive enrollment efforts, were crucial. Because of the large Hispanic population in the target area, all activities were conducted in both English and Spanish.

The initial contact was made through an informative letter sent home to parents, and an invitation was included to attend a program orientation at the school. Orientation meetings were held during the day and the evening, and parents who wished to participate enrolled their children at that time. Parents who did not attend initial meetings were invited to attend a subsequent school meeting. Eligible families who had not enrolled during the school meetings were invited to enroll by mail, and follow-up telephone calls and personal contacts were made if families still had not decided to participate. As the program became better known in the community, school meetings played a smaller role and the majority of enrollments were accomplished by mail contacts or by follow-up or home

visits. The project attempted to tailor its orientation and enrollment activities according to differences among principals in perceived appropriateness and feasibility. As an example, initial enrollment activities and resulting success levels are shown for one school in Table 3-1.

Table 3-1
Initial Enrollment Results by Activity for the Hennessey School

Enrollment Activity	Number of Families Enrolled	Number of Children Enrolled	Percent of Student Population Enrolled
1. Initial Parent meeting (AM & PM)	93	167	39
2. School meeting	10	17	4
3. Forms returned to the school	37	51	12
4. Letters, telephone, home visits	50	85	25
TOTAL	190	338	80

Source: LCHP, 1980.

There was some indication that children who were more difficult to enroll had relatively more referrable health problems than those enrolled easily. This pattern suggested that special efforts were particularly crucial to enable the project to reach the children most in need of its services.

Final enrollment and examination levels achieved in each school that participated in LCHP are displayed in Table 3-2. Overall, 81 percent of children attending the six schools were enrolled in LCHP. The relatively low enrollment levels at the Lawlor and Leonard schools are probably due to the relatively higher proportions of children with private sources of pediatric care attending these schools.

Table 3-2
Total LCHP Enrollment and Screenings

School	Student Population	Number Enrolled	Percent Enrolled	Number Screened[a]	Percent of Enrollees Screened
Arlington	275	264	96.0	219	82.9
Hennessey[b]	590	526	89.1	487	92.5
Lawlor	505	313	61.9	264	84.3
Leahy	556	489	87.9	435	88.9
Leonard	422	256	60.6	209	81.6
Tarbox	409	387	94.6	368	95.0
TOTAL	2757	2235	81.0	1982	88.6

[a]Number of children screened at least once; 207 children were rescreened in the subsequent year.

[b]Initial enrollments over a two-year period.

Initial Data Collection

Prior to the developmental screening and physical assessment, two data collection tasks were completed. First, a health history interview, concerning the child's health and immunization history and current status, was

completed with the child's parent. Information about insurance coverage and use of health services was also obtained at this time. The health history interview was sometimes completed at school by the Family Health Worker at a time convenient for parents, and in other cases at home, by a health history interviewer, who was bilingual and a member of the local community. The second data collection activity required the child's teacher to complete an assessment of the child's school functioning in both behavioral and academic areas. The teachers' assessment served as an initial level of screening, preliminary to the developmental screen that followed.

Screening

The health screening performed by LCHP included a physical examination and an assessment of neurological and motor development. Initially, screening was conducted in a mobile medical van, leased by the program. As LCHP gained acceptance in the schools, however, free school space was made available for the health evaluations. Screening and other services were available to all children irrespective of medical coverage. From Table 3-2 it can be seen that between 81 and 95 percent of the children enrolled in each school were screened. Overall, 88.6 percent of the children enrolled were screened at least once. This constitutes 71.9 percent of the total school population. In all, 2189 screenings were performed on 1982 children.

The physical assessment included a range of physical health screens and laboratory tests. The basic screening services provided are shown in Table 3-3. The physical examination was completed by a nurse practitioner in cooperation with the program's pediatrician. Laboratory tests were carried out inititially by a laboratory assistant

Table 3-3

Physical Screening Concerns of the Lawrence Children's Health Project

Height	Femoral Pulses
Weight	Inguinal Region
Weight for Height	Genitalia
Temperature	Skin and Mucous Membranes
Pulse	Nails
Respiration	Back
Blood Pressure	Perianal Area and Perineum
Head Circumference	Feet
General Appearance	Gait
Hygiene	Limbs
Sexual Maturation	Cranial Nerves
Head	Reflexes
Scalp	Finger-to-Nose
Face	Sensation
Eyes	Primitive Reflex Persistence
Ears	Vision
Mouth and Oropharynx	Hearing
Teeth	Tympanometry
Nose and Nasopharynx	Serum Lead
Neck	Hematocrit
Chest and Lungs	Urine Analyses
Heart	Sickle Cell Trait
Abdomen	G-6-P-D Deficiency

on staff and subsequently were contracted to a local medical laboratory. The physical examination required approximately one-half hour to complete; times required for the various project activities at one school are shown in Table 3-4.

The neuro-developmental assessment built on data previously collected about the child's developmental health, the teacher's assessment form and parental concerns noted on the health history. In early stages of the LCHP, the Pediatric Elementary Examination (PEEX) was administered to each child enrolled. Later, the teacher's assessment was used to identify students with developmental delays; these students were then evaluated by the family case worker with the comprehensive instrument. The PEEX is a neuro-developmental evaluation, designed by Dr. Melvin Levine at

Table 3-4

Time Factors for Project Activities
at Hennessey School

A. Physical Examination

minimum time: 25 minutes
maximum time: 50 minutes
average time: 30-35 minutes

Includes:
- undressing and dressing time
- some paperwork by nurse practitioner

B. Laboratory Work

minimum time: 20 minutes
maximum time: 30 minutes
average time: 25 minutes

Includes:
- getting child out of class
- taking blood, urine, height and weight and performing tympanometry
- laboratory analysis

C. Health History - time with parent

minimum time: 40 minutes
maximum time: 75 minutes
average time: 50 minutes

D. Developmental Assessment

minimum time: 45 minutes
maximum time: 90 minutes
average time: 55 minutes

Source: LCHP, 1980.

Children's Hospital Medical Center in Boston to assess development in following areas:

- temporal-sequential organization;
- visual-spatial orientation;
- auditory language functioning;
- gross and fine motor skills; and
- short-term memory.

The neuro-developmental assessment was given to all children during the first year of the project. These assessments were expensive, and it was determined that the teacher assessment could be used efficiently as a prescreening tool to identify high-prirority children with related problems. Consequently, in the second year of the project, neuro-developmental assessments were given only to high-priority children. Relatively recently, the LCHP received approval for Medicaid reimbursement of the neuro-developmental assessment.

Referrals

The results of the screening were recorded on the Screening Summary Form, completed by the nurse practitioner. Whenever positive findings were recorded, the child was referred for diagnosis and treatment. Though parents ultimately decided which provider to use, the program provided information on potential resources and sometimes assisted in making the appointment or with logistical arrangements, such as transportation or child care. The names of children flagged in the developmental evaluation were forwarded to the school, where local mechanisms could proceed to refer the child for special educational evalu-

ation. For project staff and parents, the results of the developmental screen were interpreted by the LCHP's consulting pediatrician or staff educational specialist, who made suggestions for action. Details regarding the nature of problems referred are presented in Chapter 4.

Follow-up

The LCHP continued to monitor progress on a case until the child no longer needed program services; that is, when the referred condition was treated or placed under the ongoing supervision of a community practitioner. The decision concerning the appropriate level of follow-up was made in a case conference of the nurse practitioner and family health worker assigned to the case. Referral conditions were classified as: 1) requiring immediate follow-up because of an acute condition; 2) requiring clinical care of an identified condition (incorporating personal contact with the family about the referral); and 3) requiring information or materials, with personal contact not necessarily required. With clinical referrals, the LCHP assisted families in arranging and keeping appointments, securing translation services and completing paperwork related to reimbursement of providers. Family health workers were responsible for providing these services to families in their caseloads, and case management forms and procedures provided a structure to assure their completion.

Conditions that did not require clinical referral could often be addressed through distribution of information and materials. Health workers circulated information to parents about such topics as obesity, lice, and the iron requirements of the growing child. Meetings were also held to teach parents about related topics, including child

nutrition and sickle cell trait. The screening process identified a large number of families who had no primary health providers; establishing these relationships became an important priority of LCHP.

If no significant findings were observed during the screening, parents were notified by mail. After permission to release information had been obtained, copies of the screening results were forwarded to the child's health provider and to the school.

The Administrative Component

The LCHP's administrative component included three major elements: training of school and project staff, billing for reimbursable services, and operation of the management information system.

Training

The LCHP organized a number of training activities for school staff members. In the early stages of the project, these were directed at informing teachers and administrators about the LCHP and about the EPSDT program. As the program became established, the need was identified for health curriculum packages useful to elementary teachers, and these became a focus of the training component. Through liaison with a school administrator and the services of a part-time research assistant, four units were prepared which dealt with dental care, hygiene, safety, and nutrition.

Ongoing training activities were organized for project staff. A major focus of this effort was training staff to administer the developmental screen. Another was

to provide information and raise awareness of staff in areas related to child health and to low-income and minority populations. Topics of this training included health concepts, medical procedures, childhood illness and treatment, first aid and safety, child care practices in Hispanic cultures, and welfare and other public assistance programs.

Billing

To make best use of existing funding sources, the LCHP organized a billing component to obtain reimburse- the project applied to the DPW for designation as an alternative Project Good Health (EPSDT) provider. This classification was established by DPW to permit agencies who cannot provide the full range of EPSDT services to offer selected services; for example, a screening program. By adding this class of provider, the state increased the potential number of Project Good Health sponsors and the capacity to screen children. All Project Good Health and EPSDT guidelines applied to the LCHP screening of Medicaid children, and services were reimbursed according to the DPW's standard rate schedule.

The first task of the billing process was to identify all eligible children. Information on medical coverage and Medicaid eligibility was obtained when the health history was completed by the parents. Medicaid cards were checked to verify name, address and identification number. In the few instances where families were eligible but not enrolled, the project helped the family apply for Medicaid. Following the determination of eligibility and completion of screening, Medicaid reimbursement forms were completed.

Approximately one-third of the participating children were not eligible for Medicaid. To provide screening services to these children, the LCHP applied for, and obtained, a waiver from the Health Care Financing Administration, which allowed grant funds to pay for screening their children. The LCHP was also permitted to pay for some diagnostic and treatment services for non-eligible children who required referral. Decisions about how to allocate those resources were made according to a means test developed by the program: children eligible for the free or reduced-price school meals program would be eligible for subsidized services. The LCHP applied Medicaid regulations and reimbursement rates to the provision of services to these children.

Management Information System

In the delivery of health services, the management information system (MIS) plays a pivotal role. Case management and reimbursement constraints necessitate a system capable of storage and easy retrieval of large amounts of data. The MIS requires that health and billing records conform to specific parameters, and it can be a tool in developing instruments that are explicit, logical, easy to complete, and that facilitate ready reference. The project developed a micro-computer MIS that proved very satisfactory for desired functions. Part of the MIS was based on available software packages and the balance was constructed specifically for project needs. Cost considerations, however, prohibited the project from putting clinical and billing records on computer. These were maintained on paper for use in conjunction with computer-based management records.

Chapter 4
DESCRIPTION OF THE POPULATION SERVED

The population description in this chapter and the selected findings presented in the next are based on analyses of data for elementary school children participating in the LCHP during the 1980-1981 academic year. This sample comprises 650 children attending three schools (Arlington, Hennessey, and Tarbox). These data are from initial examinations of the childern during the first full school year of program operation. These children represent approximately one-third of the total initial screenings conducted through June, 1982. It is felt that they are representative of the total elementary school population served by LCHP. Moreover, the data were collected during a period when program protocols were well established, thus avoiding possible problems and inconsistencies that often occur when a program is just beginning.

The distribution according to grade in school of the children included in these analyses is presented in Figure 4-1. In the Lawrence Public Schools, children must be at least 5.0 years of age upon entering kindergarten. It can been seen in Figure 4-1 that children in the oldest three grades were slightly overrepresented in the sample. The children were approximately equally represented by sex, and the median age is 9.3 years.

Most of the school children were of Hispanic origins or white, with relatively few children reported as black or "other" (Figure 4-2). The children classified as "other" were mostly of Southeast Asian or Portuguese origin. This large proportion of Hispanic children is reflected in the fact that Spanish was reported as the first language for 55 percent of the children, the balance

Figure 4-1. Percent of School Children According to Grade in School

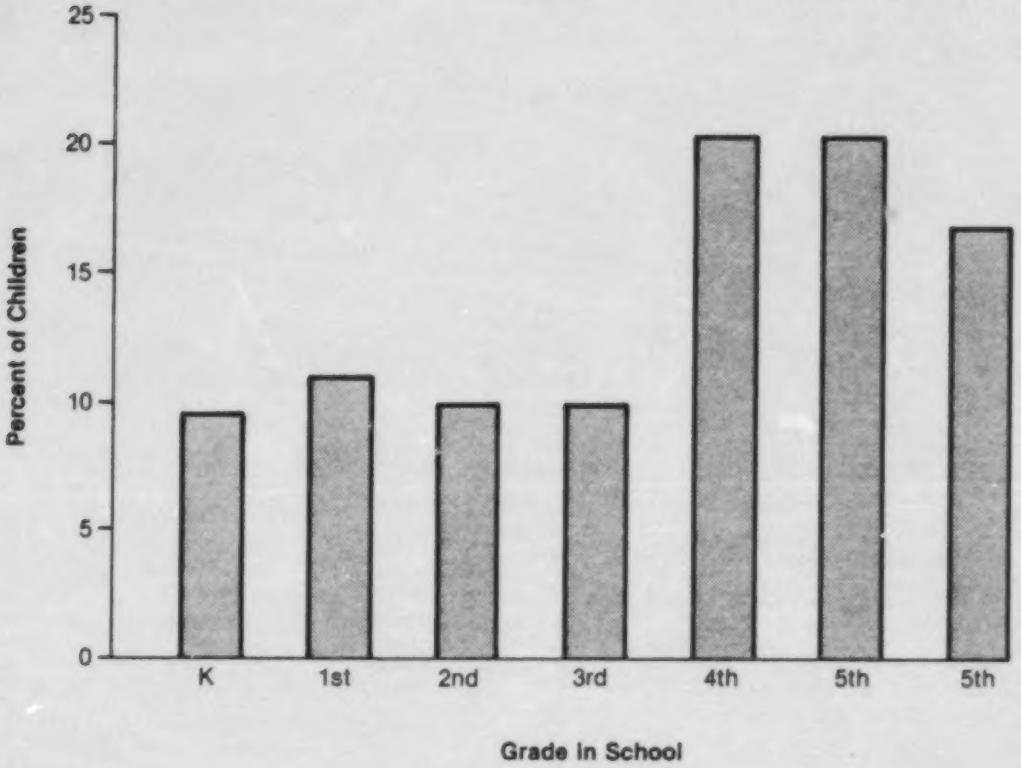
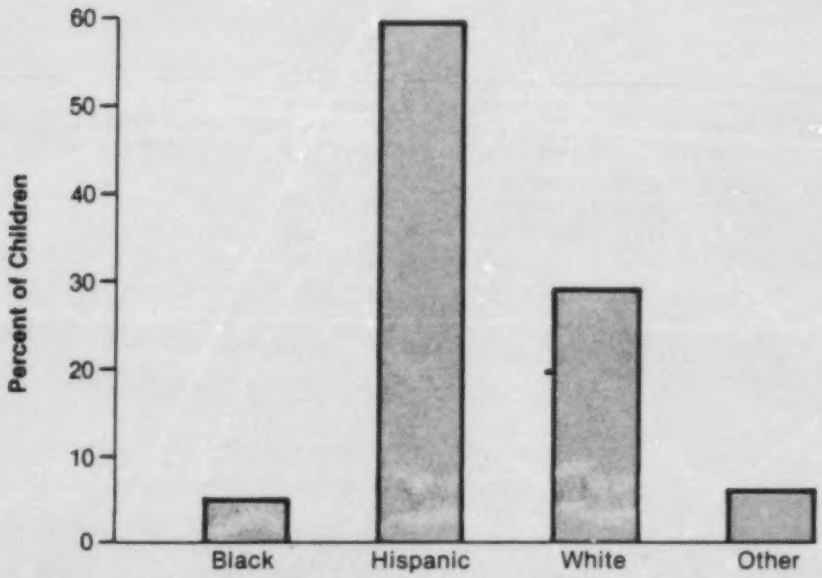


Figure 4-2. Percent of School Children According to Ethnicity



of whom reportedly spoke English (40%) or other languages (5%), primarily French, Italian and Portuguese. With this diversity in ethnic backgrounds, it is clear why bicultural, bilingual case workers were necessary for appropriate case management and family relations. Often, health service providers are not sensitive to ethnic differences, and language differences can be barriers to access to health care for children.

Table 4-1 presents the percentage distributions of children according to selected demographic and household characteristics. In general, the children can be characterized as coming from rented homes, and 65 percent had five or more family members. About half of the children had moved two or more times in the past three years (median 1.54 times). Most of the children (82%, not in Table 4-1) were born in a city. The majority of children (62%) came from single-parent homes; by far the most common situation (59%) was that of the mother as primary caretaker. On a nationwide basis, it was estimated that in 1978, 18.7 percent of children under 18 years of age were in one-parent families (Select Panel, 1981).

The level of maternal education is known to be an important correlate of child health irrespective of income level. Forty-two percent of the mothers had an eighth-grade education or less (Table 4-1); this contrasts sharply with a corresponding national estimate for 1975-76 of 16.7 percent for mothers of children 6 to 11 years of age (Select Panel, 1981). The median level of maternal education for LCHP children was 9.12 years, which is considerably lower than the 11.9 years reported as the median level in the 1970 Census for the Commonwealth of Massachusetts (U.S. Census Bureau, 1973).

Table 4-1

Distribution of School Children According to Selected Family Characteristics

Characteristic	Percent of Children[a]
Dwelling	
Projects	13
Rented home	77
Own home	10
Size of Household	
2	2
3-4	33
5-7	55
≥ 8	10
Household Moves in Past 3 Years	
0	26
1	23
2	25
3	16
≥ 4	10
Primary Caretaker	
Both Parents	34
Mother Only	59
Father Only	3
Other	4
Mother's Education (highest grade)	
1st-6th	23
7th-8th	19
9th-12th	55
College	3

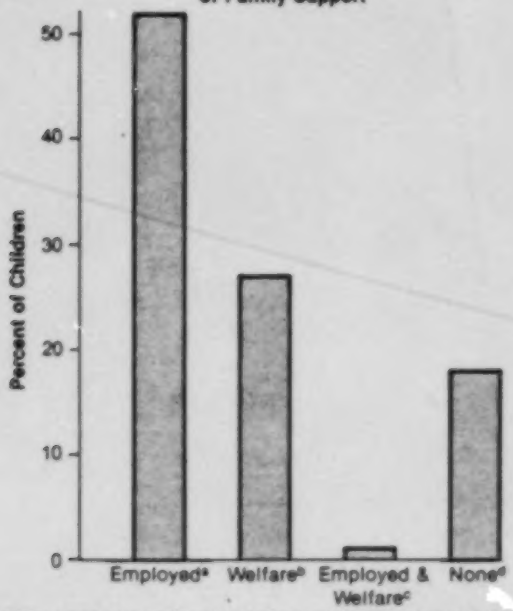
[a]Percentages are calculated within each characteristic category, so that the sum of subcategories is 100%.

Income data per se were unavailable for families of children participating in LCHP. There was documentation, however, concerning employment status, receipt of public assistance, and whether the family carried private health insurance. These variables are important both as proxy measures of income and because of their direct applicability to health services to children.

Information regarding the primary caretaker was combined with that concerning welfare status, and children were categorized according to the employment/welfare status of their primary caretakers. The distribution of means of support of LCHP families through employment or welfare is presented in Figure 4-3 (see footnotes to the figure for detailed explanation of categories). Approximately half of the children came from families supported by employment, while about one-quarter of the children's families were supported by welfare. Over one-sixth (18%) of the children participating in the LCHP were in families for whom no form of financial support was reported. Clearly, the LCHP population must be considered as economically disadvantaged, characterized by high unemployment and considerable dependence upon welfare.

Because EPSDT services are paid for by Medicaid in Massachusetts, the extent of eligibility and receipt of AFDC or Medicaid are important characteristics of the population served. Figure 4-4 presents the distribution of children who received free or subsidized school lunches and whose families received AFDC or Medicaid or had health insurance--all of which are directly concerned with health-related services.

Figure 4–3. Percent of School Children According to Means of Family Support



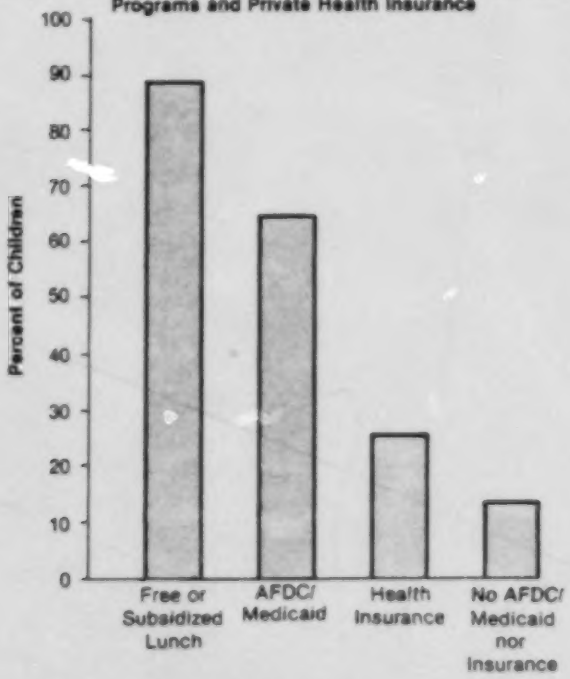
[a] Primary caregiver is employed in single-parent homes, or one or both parents are employed in two-parent homes and not receiving welfare.

[b] Primary caregiver receives welfare in single-parent homes, or both parents receive welfare in two-parent homes, or one parent receives welfare with the other unemployed.

[c] Only for two-parent homes where one parent is employed and the other receives welfare.

[d] Primary caregiver is unemployed and receives no welfare in single-parent homes, or both parents are unemployed and receive no welfare in two-parent homes.

Figure 4–4. Percent of School Children According to Public Assistance Programs and Private Health Insurance

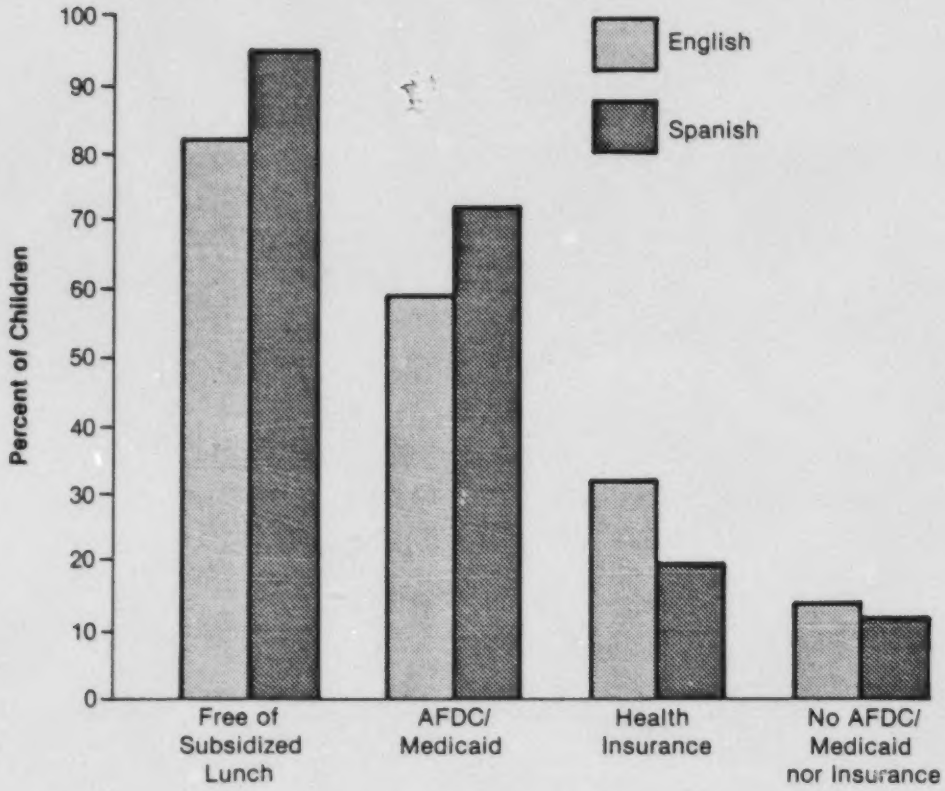


Almost all children (89%) received free or subsidized lunches at school, and most (65%) received AFDC or Medicaid support and services. In the course of the project there were only a few families who qualified for AFDC or Medicaid but were unaware of it, or who were eligible but did not know about availability of specific services. About one-quarter of the children (26%) had Blue Cross or other family health insurance, and about 5 percent of the children were eligible for AFCD or Medicaid and also had family health insurance. Fourteen percent of the children have neither AFDC/Medicaid nor health insurance. Presumably, this latter group comprise the working poor and constitute a group at particular health risk due to poor access to or unavailability of conventional health care services.

Some national data are available for comparison. It is estimated that approximately 27 percent of all U.S. school children (including high school) have free or subsidized lunches (Nelson et al., 1981). Clearly the LCHP children are well above national levels in this regard. Nationally, in 1976, 10.6 percent of children 6 to 11 years of age were on Medicaid, and 10.9 percent of this same group had no insurance or other coverage for health (Select Panel, 1981). Again, the LCHP children are well above the national average, especially in Medicaid participation.

It was found that within the LCHP population, receipt of health-related public assistance and having health insurance are associated with the first language spoken. Figure 4-5 presents the percent of children speaking Spanish or English as a first language within the previously defined categories of public asssistance and health insurance. This figure does not include the

Figure 4-5. Percent of School Children According to Public Assistance Programs and Private Health Insurance by First Language



approximately 5 percent of children with other first languages. Within the LCHP population, a greater percentage of Spanish-speaking children than English-speaking children received free or subsidized lunches and Medicaid. Relatively fewer Spanish-speaking than English-speaking children have family health insurance, but there is little difference between the two language groups in terms of not receiving AFDC/Medicaid or having family health insurance. It is likely that these language-related differences largely reflect differences in need. If speaking Spanish

as a first language poses barriers to obtaining services, one would expect "true" differences based on need to be even greater than these observed. Because there are not income data for this population, it is difficult to determine income-related need per se.

Chapter 5

PROJECT ACCOMPLISHMENTS AND SELECTED FINDINGS

The activities and success of demonstration projects are often difficult to evaluate. In this chapter we present an outline of major project accomplishments within the context of program goals and the brokering concept. Selected findings regarding the collaborative and brokering mechanisms and selected findings on participating children are also presented. This chapter is not intended as a comprehensive account of all findings, but the information forms the basic framework from which the major conclusions are drawn.

Project Accomplishments

Throughout the course of demonstration projects, progress is often evaluated by the attainment of intermediate objectives or milestones within certain domains. These accomplishments are often defined in qualitative or task-oriented terms rather than quantitatively, but they are important indicators of the success of the project. In this section, we present brief descriptions of two project accomplishments within different domains and list other selected accomplishments that signal success on the part of the project.

The LCHP as an Alternate Provider

The LCHP, through the Merrimack Education Center, became registered with the Massachusetts Department of Public Welfare, which administers EPSDT, as an alternate provider. Alternate provider status denotes a nontraditional and partial provider of services. Thus, LCHP was

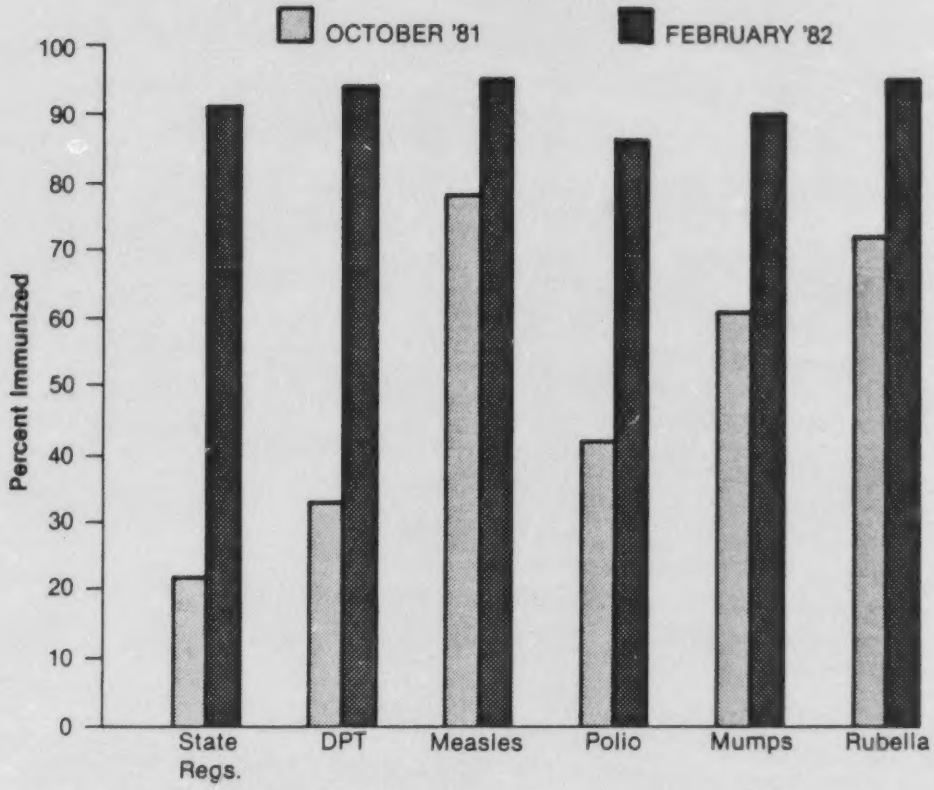
not expected to provide the full range of services, particularly those related to diagnosis and treatment, required under the Early Periodic Screening, Diagnosis and Treatment (EPSDT) program. As an alternate provider, LCHP follows all pertinent EPSDT guidelines for screening Medicaid-eligible children and bills the state DPW based on appropriate standard fee schedules. The designation as alternate provider thus allows the LCHP to obtain direct reimbursement for child health services. It is through this mechanism that the bulk of the financial support is obtained. Moreover, it is through such a reimbursement mechanism that the LCHP model may achieve wide applicability and potential for being self-supporting in the future.

High School Immunization

In collaboration with Lawrence Public Schools, LCHP evaluated the immunization status of youths attending Lawrence High School in the fall of 1981. At that time, it was determined that a large percentage of the high school students were incompletely immunized according to state regulations. The LCHP made a concerted effort to broker needed immunization services for students and was rather successful in this regard. As a final step, the LCHP held an immunization clinic to complete immunizations of students whose needs could not be brokered satisfactorily with available resources.

Figure 5-1 presents the percentages of children fully immunized for each of five communicable diseases and the percentage meeting state regulations (including all five diseases) as determined in October 1981, and again in February 1982, at the end of the brokering effort. Only 22 percent of Lawrence High School students were in compliance

Figure 5-1. Percent of High School Youth Completely Immunized for Each of Five Communicable Diseases and Percent Meeting State Regulations, before and after LCHP Immunization Effort (N = 1477)



with state requirements when first evaluated in October 1981. This lack of compliance was primarily due to incomplete immunizations for DPT and polio, although large proportions of the children were also not completely immunized for other diseases.

Over a five-month period immunization rates increased substantially in every category, so that overall compliance with state immunization regulations reached 91 percent. Of the over 1000 students who shifted from noncompliance to compliance during this period, 450 were immunized directly through the LCHP clinic. Thus, for over

half of the students, health care was brokered successfully using existing services.

Other Selected Accomplishments

In addition, the LCHP successfully:

- established a contract with the Children's Hospital Medical Center in Boston to provide professional services through a pediatric fellow and pediatric nurse practitioners;
- established teachers' assessments of children as part of regular screening activities;
- obtained permission for direct Medicaid reimbursement for neurodevelopmental examinations;
- developed a package of related instructional materials for Lawrence Public School teachers;
- developed a series of educational materials for parents regarding common childhood problems;
- held evening workshop on hypertension and related conditions for Spanish-speaking parents;
- developed health curriculum materials for elementary school children;
- contracted with the Lawrence Public Schools to oversee the school health program for the city;

- organized a microcomputer-based management information system for student health and school records;

- established agreements with local hospitals and primary care providers to accept project referrals and to be reimbursed at Medicaid rates;

- brokered pharmaceutical services through a local pharmacy;.

- arranged for referrals for optical services and other specialty services;

- coordinated with existing lead testing in the community.

- established an agreement with the Boston Sickle Cell Center to provide blood tests and counseling for children with sickle cell trait;

- screened preschool siblings of the enrolled population during summer vacation; and

- agreed with local day care centers to be involved with screening of participating children.

Findings Related to the Collaborative and Brokering Mechanism

The achievements of the LCHP described above are largely outcomes of the collaborative and brokering mechanisms. Taken as discrete events, however, it is difficult to see them in the perspective of the goals for this com-

ponent. Thus, it is appropriate to frame these outcomes in a broader, but still qualitative evaluation of the function of the collaborative brokering model. Much of this analysis was conducted by MAGI Educational Services; their findings have been reported in full in An Evaluation of the Collaborative/Brokering Mechanism (1981).

Five criteria have been identified to assess operation of the program:

- success in providing services which meet appropriate standards of quality with appropriate follow-up;
- success in achieving integration and coordination of existing and newly established services;
- success in increasing the responsiveness of provider (and consumer) organizations to the needs of the target population;
- success in providing services cost-effectively; and
- success in developing a replicable model of collaborative brokering service delivery.

This section consists of brief discussions and observations about program functioning in each criterion domain.

Provision of High-Quality Services

Of the criteria, perhaps the most important is that concerning provision of quality screening and follow-up services. During the course of the project, approxi-

mately 2000 children were screened in the Lawrence Public Schools. This number comprised 89 percent of the children enrolled in the LCHP and 72 percent of the total student population of the participating schools. The health screening protocol administered to all participating children meets standards established by the American Academy of Pediatrics. The developmetnal screen used to screen children who appear at risk for developmental delays was especially comprehensive. All positive findings were referred to parents or to appropriate service providers. Review of a sample of cases indicated that relatively few false positives were included among the referrals; approximately 80 percent of referred conditions in this sample were confirmed upon follow-up.

Difficulties were encountered, however, that have implications for the LCHP in institutionalizing the delivery of brokered health services in the future. Many families did not have a primary health provider; through the referral process, the LCHP sought to link families and local providers. The program met substantial resistance from local physicians with regard to accepting these families, presumably because of low reimbursement rates for services to Medicaid recipients and the limited number of providers in the area. Further, given that lack of primary care is one of the more frequent reasons for referral, linking families and providers became a major priority of the program. Yet, of the follow-up services the program offered, this was one of the more time-consuming and required the most effort from case management staff. In estimating the long-term prospects of the LCHP after the demonstration ends, it seems that many core functions may become financially self-sustaining. However, the case management function is not reimbursable, even though it may be one of the most useful to a low-income population.

Coordination and Integration of Existing Services

With respect to integration and coordination, the LCHP's operation must be considered in the context of existing service delivery systems. The program's ability to offer integrated services may have been limited in that it was constrained to serve primarily the Medicaid population and reimburse at Medicaid rates. Beyond this, the program succeeded in offering coordinated services. Structured primarily as a broker, no new direct service functions were adopted except as necessary to fill gaps in community services. Provision of services through brokering dovetailed well with the existing network of providers. An example of this was the LCHP's success in meeting the needs of school special education staff for physical exams, prior to the development by them of Individual Education Plans for children as mandated by federal legislation. Previously, obtaining these exams had been a laborious process, which depended on parents to make arrangements through traditional channels. Routine provision of these assessments by LCHP streamlined the process considerably. A major accomplishment in the domain of integration and coordination was the invitation from the Lawrence Public Schools for the LCHP to oversee the school health program in the city. Thus, the program accepted responsibility for supervising school nurses, student compliance with immunization requirements, and school-sponsored vision and hearing screenings. Not only may this wed program and school efforts related to immunization, vision and hearing, but the link with the school nurses may be an avenue for the transfer of case management tasks from the LCHP to school health staff.

Responsiveness of Provider Organizations

The third criterion is concerned with the extent to which the program was able to make provider and consumer organizations more responsive to the health needs of low-income children. As described above, local physicians were reluctant to be involved with this population. The LCHP strengthened its relationship with, and gained acceptance from, its consumer organization--the schools. For example, after observing the screening process, school administrators made space available to the program in the schools and the LCHP was able to phase out use of the medical van. The relationship with the schools could be further strengthened if school principals were more directly involved. They already frequently served as informal brokers with families and wished to be informed about the program's follow-up with them.

Another area in which the relationship could be strengthened involves the developmental screening. Initially, the LCHP routinely screened all children and forwarded results to the school. The information was not understood, nor was it perceived to be useful by teachers; hence the routine communication was not meaningful. The screening process was then substantially modified; teachers' assessments and health histories served as preliminary screens to identify children requiring the comprehensive screen. These modifications may have remedied the initial problems; however, no easy solution is evident for a related problem. The developmental screening systematically identified more children than previously identified who have educational and behavioral problems. Yet special education resources, as well as structures within regular classrooms to handle more routine behavior problems, remained severely constrained.

Cost-Effectiveness

Cost-effective delivery of services was another major domain of evaluation. As described above, the ability to offer services was limited by the attractiveness of Medicaid reimbursement rates. The program had thus far made full use of Medicaid entitlements for health screenings, diagnosis and treatment. Further, the LCHP obtained approval from the DPW for reimbusement of the developmental screen for Medicaid children. However, two additional avenues of payment of services were not fully explored. First is payment by parents or private insurance for screening and treatment services, when the family is not eligible for Medicaid. Second is funding by the school system of developmental screening of non-eligible children. Since the school system is responsible for screening children who may have special needs, this approach may be promising. Similarly, after the LCHP begins to administer vision and hearing testing for the public schools, services to eligible children will not be reimbursable under LCHP's alternate provider designation.

These funding sources and anticipated service levels are the basis for the expectation that the LCHP may become self-supporting after the demonstration ends. Each nurse practitioner screens an average of six children per day. To make the program pay for itself and continue to provide health screens to low-income children not eligible for Medicaid, an estimated level of nine children per day must be sustained and the following must occur (MAGI, 1981):

- services of a physician back-up must be made available to the nurse practitioners without additional cost, from the city school district, Department of Health or

other external source, such as the local hospital, Boston Children's Hospital, Family Service Center, etc;

- preventive health screening must take place in the schools or at some other free and accessible facility;

- the schools served by the program must have an average Medicaid-eligible population of approximately 50 percent; and

- school nurses or other school district personnel or volunteers must assist in the record-keeping and referral/follow-up procedures.

At this time, it does not appear possible to fund developmental screens for non-Medicaid children through marginal savings from screens reimbursed by Medicaid. The case management function, moreover, is not reimburseable and to sustain this critical component, an innovative strategy such as transferral of responsibility to school nurses is mandatory.

Replicability

The last criterion domain is that of replicability. Replicability of a program may be measured in three ways (MAGI, 1981; SRI, 1978). First is the correspondence between the need and the intervention designed to relieve it. Needs of low-income children in Lawrence for prevention and treatment services have been described, and LCHP was successfully addressing these needs. The second concerns the ability of the program to present itself to

other organizations interested in applying the model. Program management has this capacity; however, an implementation manual would be vital to any serious replication efforts. Lastly, replicability is partly determined by costs of implementation. Even an excellent program will not be replicated if costs are out of line. The LCHP was a cost-effective delivery mechanism, making substantial use of available entitlements. One constraint on the program's replicability, however, is the considerable dependence of the model on reimbursement by Medicaid. If state agencies were not willing to establish the alternate provider designation, or if providers were not willing to comply with eligibility regulations and standard rate schedules, it is unlikely that the model could be replicated.

Findings on Children

The findings for children are based on the sample of elementary school children described in Chapter 4. Many of the findings can be interpreted as specific needs of the population, while other findings help in understanding determinents of health problems and document program success.

LCHP was designed and managed as a demonstration project. It was not designed as a rigorous evaluation of service delivery, and therefore many important questions regarding program impact cannot be answered at this time. Nevertheless, it is important to document health problems identified in the course of the project, because a chief objective in the program was to screen and refer children. We have little empirical evidence regarding the outcome of these referrals; clearly, this should be included in subsequent implementations of programs like the LCHP.

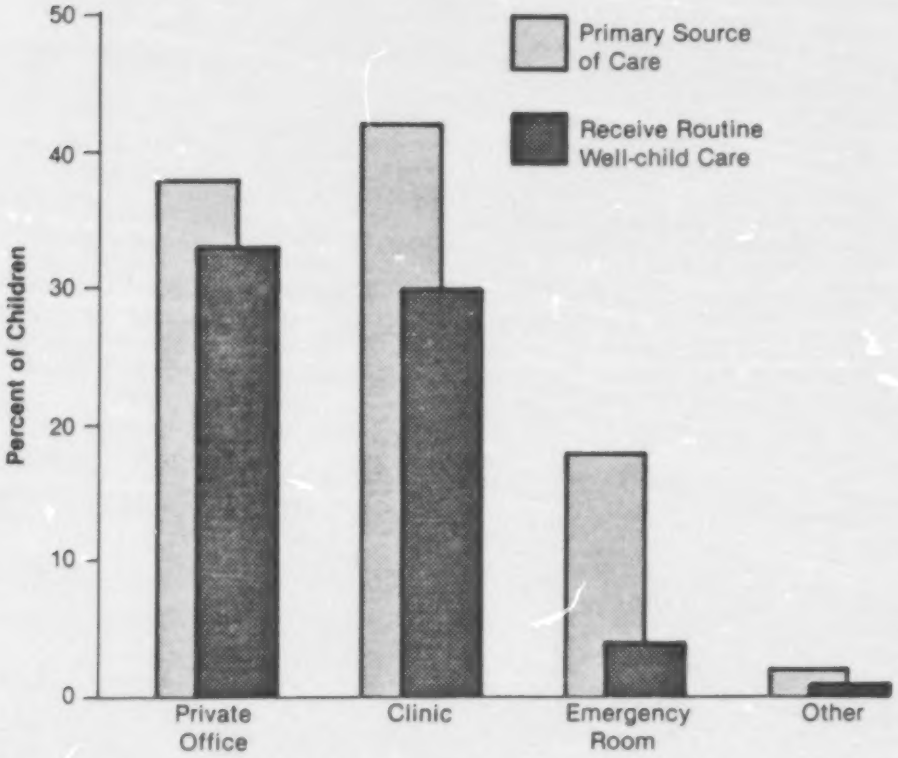
Use of Health Services

As a group, children participating in the LCHP were not well integrated into the existing health care system. Thirty-one percent of the children reported they had no routine well-child care and 33 percent reported no regular dental care. By comparison, only 9.1 percent of six- to eleven-year-old U.S. children reported no source of regular medical care in 1974 (Select Panel, 1981). Even in the poorest annual income group (below $5,000 per year), only 18.1 percent of U.S children were without regular care. We know of no corresponding national data regarding source of regular dental care.

Figure 5-2 presents the distribution of children according to their reported primary source of pediatric care and the percentages of children reporting routine well-child care by each source. The data were not collected in a way that allowed definition of those children who reported having no source of pediatric care. The most frequent primary sources of pediatric care were clinics (42%) and private offices (38%), and 18 percent of the children relied primarily on hospital emergency rooms for pediatric care. It can be seen in Figure 5-2 that there is considerable variation among primary sources of care with respect to receipt of routine well-child care. For those children who receive care in private offices, almost all (87%) also receive routine well-child care. By comparison, only about one-fourth of the children receiving primary care in emergency rooms report receipt of routine well-child care.

Immunization for childhood communicable diseases is known to be efficacious and cost-effective. Immunization status of children is also an indicator of utiliza-

Figure 5-2. Percent of School Children According to Reported Source of Primary Care and Percent Reporting Receipt of Routine Well-child Care within Each Source



tion of health services. Chapter 76, Section 15 of the General Laws of Massachusetts requires immunization against diphtheria, pertussis, tetanus, measles, and poliomyelitis before admission to public or private schools. (Later, immunization for mumps and rubella was added for kindergarten and first-grade children.)

Based on the criteria established by the Massachusetts Department of Public Health, immunization records of school children were evaluated to determine immunization status at the time of initial examinations. Table 5-1 presents the percentage of children who have received appropriate immunizations of seven types. There were no

Table 5-1

Immunization Status of Examined School Children

Immunization	Percent Complete[a]
Polio, primary	96.0
Polio, boosters	77.0
DPT,[b] primary	96.0
DPT, boosters[c]	78.0
Measles	96.0
Mumps	95.0
Rubella	96.1

[a]Percentages calculated on the basis of those with immunizations records (missing data range from 16 to 20%).

[b]Diphtheria, pertussis, tetanus.

[c]After age five, of if ten years has passed since primary series, pertussis is omitted (DT).

significant trends across age with regard to complete immunization. Between 95 percent and 96 percent of the children are fully immunized except for polio and DPT boosters; these rates are 77 percent and 78 percent, respectively. Overall, 70.6 percent of LCHP children are fully immunized. As noted in a footnote to Table 5-1, between 15 and 20 percent of children had no immunization records. It is unlikely that the children with missing records are any more completely immunized than the balance of the sample. Even if all children with missing records proved to be fully immunized, the overall complete immunization rate would only reach 77 percent.

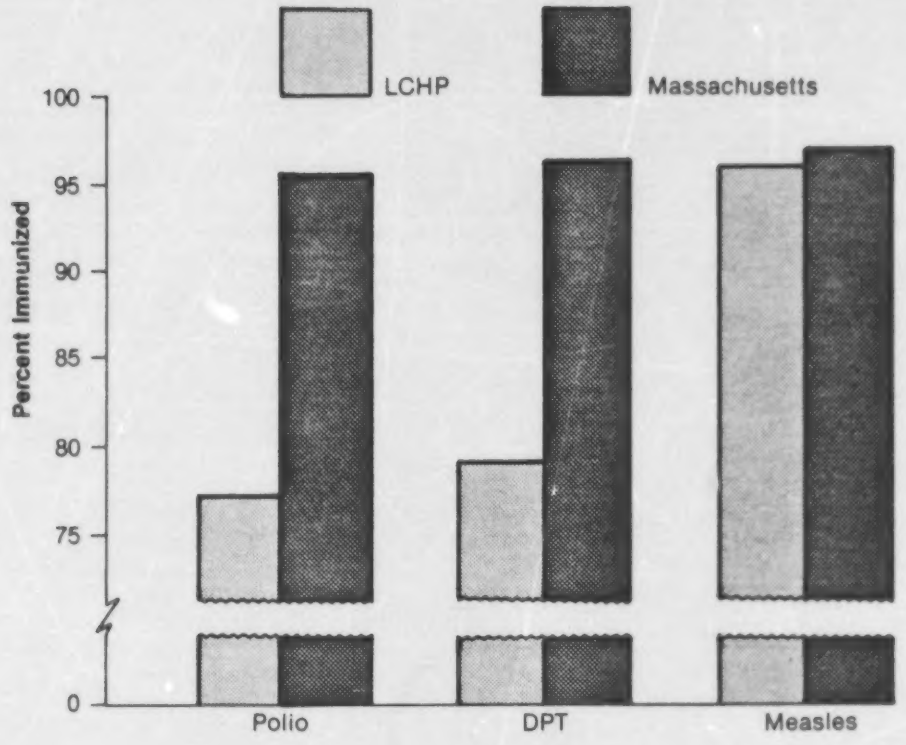
Available data for comparison from state and national sources refer to immunization rates for new children entering schools rather than for all children attending school, and so they are not directly comparable. Nevertheless, approximate immunization rates for the state may be calculated as the accumulated rates for kindergarten children over the period from 1974 to 1981. This is the period representing starting years of school for the LCHP elementary school children. Such state estimates, of course, do not include any updating of immunization status during school years, nor do they account for new children entering the schools, so these estimates are probably low.

Figure 5-3 presents the immunization rates for LCHP children and estimated rates for Massachusetts, calculated as described above from data provided by the Massachusetts Department of Health. Figure 5-3 includes polio, DPT, and measles only, because mumps and rubella were technically not required for kindergarten children until 1978. Based on these state estimates, immunizaton status for LCHP children is markedly below state levels for polio and DPT. As shown in Table 5-1, this deficit is largely due to incomplete boosters.

Physical Growth

There are limited data regarding the fetal growth of LCHP children. Birthweight, as a measure of fetal growth, can be viewed as an indicator of prenatal well-being, and low birth weight ($\leq$ 2500 gm or 5.5 lb) and premature birth (less than 37 weeks of gestation) are predictors of subsequent mortality and morbidity. Although maternal recall of birthweight is subject to some error (Hoekelman et al., 1976), the reported central

Figure 5-3. Percent of School Children Completely Immunized for Three Diseases in LCHP Compared to Massachusetts



tendencies do not vary greatly from that observed. The rate of low birth weight for LCHP children is 13.1 percent. This compares to a national rate of 7.7 percent in 1973, a year close to the mid-range of birth years for LCHP children (Querec and Spratley, 1978). For mothers who completed nine to 11 years of schooling (close to the LCHP median of 9.12), the national sample had a low birth weight rate of 10.3 percent, still well below that found in this project's population.

The rate of prematurely born children in LCHP was 11 percent; this is considerably greater than a na-

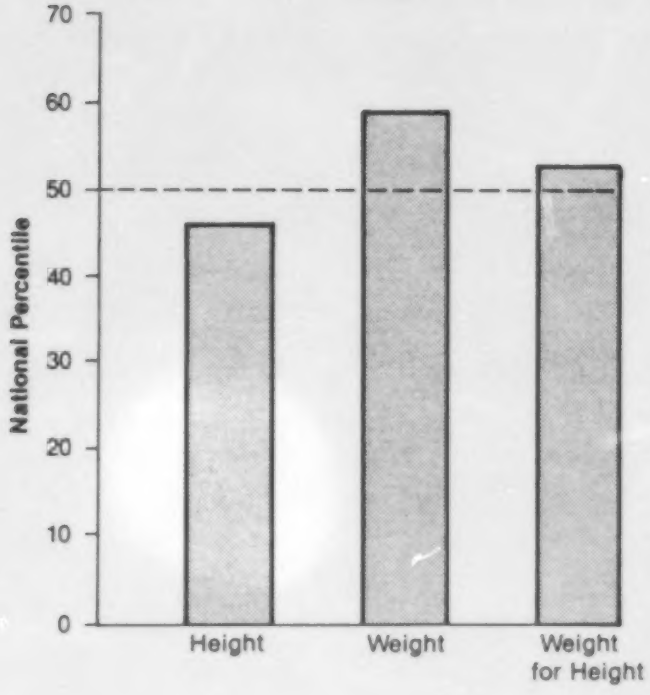
tional estimate of 9.2 percent for the year 1973 (Querec and Sprately, 1978). Within the limitations of maternal reports, these data do suggest a population of children who were at above average risk at birth, based on birth weight and gestational age.

Postnatal physical growth status is considered an indicator of well-being. From the measurements of height and weight taken during examination, exact age- and sex-specific percentiles relative to national norms (Hamill et al., 1979) were calculated using a computer program provided by the Centers for Disease Control.

Figure 5-4 presents median percentiles for height, weight, and weight for height for LCHP children relative to the U.S norms. As a group, the children tend to be only slightly shorter than the reference median (50th percentile). If the children falling below the 5th percentile for height may be considered at risk of stunting, 2.7 percent are in this group. This is a lower rate than one would expect from a "healthy" population (i.e., 5%). The median percentile for weight (59.2) exceeds the reference median, and less than 1 percent of the children are at risk for underweight (< 5th percentile).

Weight for height percentiles were calculated for the prepubescent children only (as specified by the reference data); for these children, the median percentile (53.2) is slightly greater than the reference median, as would be expected from the height and weight findings. Based on the distribution of weight for height, 8.7 percent of the children could be considered at risk for obesity (> 90th percentile); this is fewer than expected from a distribution of representative U.S. children.

Figure 5-4. Median Percentiles for Height, Weight, and Weight for Height Relative to U.S. Norms



It will be recalled that weight for height percentiles were only calculated on a partial sample. If weight alone is used as an indicator of obesity (>90th percentile), 8.7 percent of the children still would be considered at risk. Hence, although these children tend to be slightly heavy, as a group they are probably not at risk of obesity.

Groups at Risk

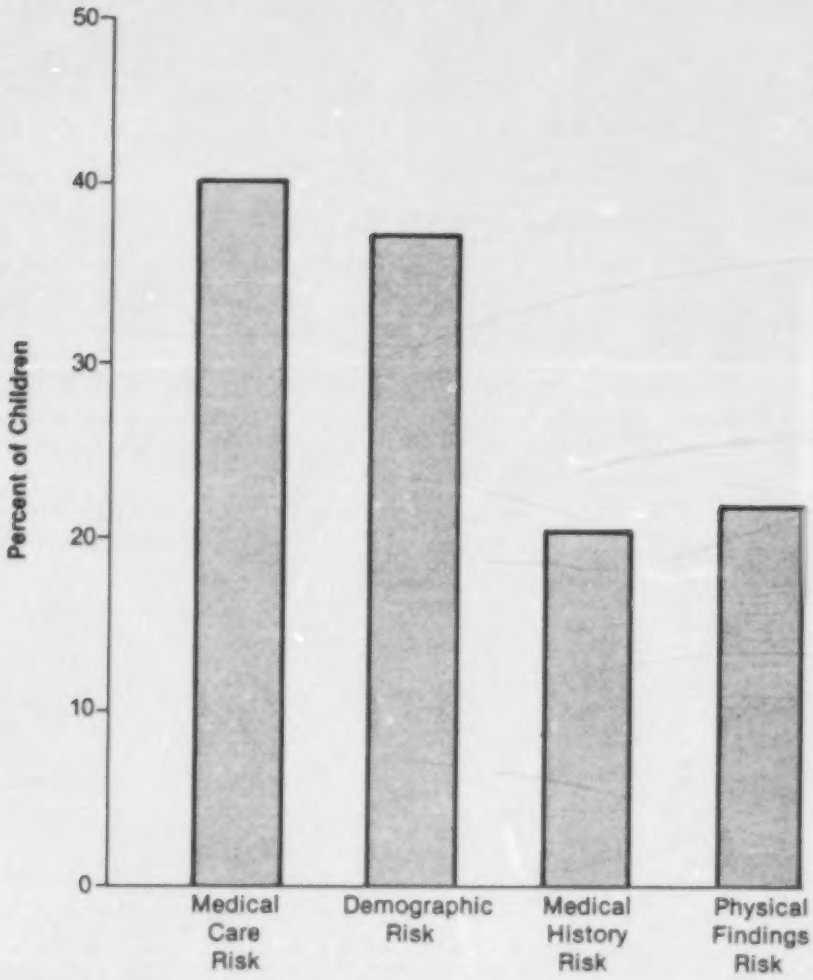
As an approach to summarizing health status information for children, four risk groups were devised based on different aspects of available data. The risk

groups were defined primarily through discussions with Drs. Melvin Levine and Marc Lerner of Children's Hospital Medical Center. The intent has been to provide face-valid classifications of children at risk within separate domains. The factors and scoring constituting risk groups are presented in Table A-1 in the Appendix. The four groups refer to children considered at risk because of findings in these domains: Medical Care, Demographics, Medical History, and Physical Findings. The items comprising these risk groups are non-redundant. For the present analyses, if a child had missing data on a particular item he was assumed to be not at risk for that item. This approach means the proportions of children at risk may be underestimated to the degree that missing data are present. The interpretation of "at risk" in this context is that a child (or group) so classified has a constellation of findings that indicates an increased probability of health consequences related to the domain specified. Note that the risk groups do not pertain to specific diseases but rather to classes of probable needs.

The distribution of school children according to the four risk classifications is presented in Figure 5-5. According to this classification, between 20 and 40 percent of the children are considered at risk within any one group, with the largest groups those at risk because of inadequate medical care (40.6%) and because of demographic characteristics (37.5%). Because criteria for risk groups are specific to this study, there are no corresponding data from other populations for comparison.

It is of interest to inquire about the relationships among risk groups, both from the perspective of the independence of the risk classifications, and also to

Figure 5-5. Percent of School Children in Health Risk Groups



discover the distribution of children who belong to more than one risk group and hence have special needs. The frequencies of children who belong to various combinations of risk groups are presented in Table 5-2. As expected, the frequency of children with membership in more than one risk group is considerably less than frequencies for single group membership. Still, more than 17 percent of the children are at risk due to inadequate medical care and to demographic factors. The statistically significant association between these two risk groups indicates a lack of independence between them; that is, children at risk

Table 5-2

Frequencies of School Children in More Than One Risk Group

Risk Groups	Percent of All Children
MC/Dem	17.3[a]
MC/MH	9.3
MC/PF	11.3[a]
Dem/MH	6.8
Dem/PF	8.6
PF/MH	6.0[a]
MC/Dem/MH	3.1
MC/Dem/PF	5.4
MC/MH/PF	2.6
MC/Dem/PF/MH	1.9

MC = Medical Care
Dem = Demographic
MH = Medical History
PF = Physical Findings

[a]Bivariate associations statistically significant using chi-squared statistics ($p<0.05$).

because of demographic characteristics tend to be at risk because of inadequate medical care.

Approximately one out of 10 children have membership in both the Medical Care and Physical Findings risk groups, and there is a statistically significant association between membership in these two groups. Similarly, children who are at risk based on their medical history tend also to be at risk based on findings of the physical examination, although the proportion of all children that share these two risk factors is small (6%). Associations between other pairs of risk factors were not significant but it is important to note that at least 6 percent of all children examined are at risk for more than one set of factors. The proportion of children with membership in three or four risk groups is, of course, less than for previous classifications, but these children probably have special needs and should be identified accordingly.

Analyses were conducted to investigate variables related to membership in the risk groups. This analysis was intended to identify associated variables (not included in specific risk determinations) that may give insight into the implications of being at risk for certain factors. A detailed description of these analyses is available in Himes and Smith (1981).

Health Problems

As part of the physical examination, the examining nurse practitioner summarized specific problems based on a review of the child's records and the findings

of the physical examination. These problems were summarized with the principal purpose of providing referral, when necessary, and for documentation for case management purposes. The problems were recorded following customary clinical practice and not using a precise reporting format. While information in this form is satisfactory for case management and referral, it does pose problems for coding and analyses of specific problems. For example, a problem like "needs to see a dentist" may mean that the child has no regular dentist and needs a primary dental provider, and/or that the child has caries, an abscess or fractured tooth, and so forth. Consequently, while post hoc interpretation of the number of specific problems a child has is difficult to accomplish, one can be relatively certain of the kind of problem specified. As a result, analyses relating to health problems of the children examined had to be carried out on the child level rather than the problem level. This is to say that the frequency of children having problems within categories is the unit of analysis rather than the frequency of the problem per se. Although this may seem a trivial distinction, it does affect interpretation of some of the analyses, and it limits analyses when making judgments regarding specific problems.

Children's health problems were coded according to the codes listed in Table A-2 in the Appendix. The frequencies of school children having problems within problem categories are presented in Table 5-3. The highest frequency of children within a category is 64.4 percent in "Health Care." This category includes general health care needs, such as need for primary care providers, but does not include health care needs specific to a particular problem (e.g., need for a vision exam). The

Table 5-3

Frequencies of School Children Having Problems Within Categories

Problem (Category)	Number of Children	Percent of Children
Family Health	4	0.6
Social Health	9	1.4
Accidents/Injury	10	1.5
Previous Health	4	0.6
School Function	24	3.7
Growth	72	11.3
Integument	71	11.2
Eyes	31	4.9
Ears	120	18.9
Neck, Nose, Throat	18	2.8
Breasts	6	0.9
Respiratory	19	3.0
Cardiovascular	15	2.4
Gastrointestinal	19	3.0
Urogenital	32	5.0
Musculoskeletal	65	10.2
Neurological	21	3.3
Endocrine	2	0.3
Nutrition	6	0.9
Dentition	200	31.4
Vision	145	22.8
Hearing	102	16.0
Health Care	417	64.4
Developmental	50	7.9
Hygiene	2	0.3
Allergy	1	0.2
Psychological/Emotional	18	2.8
Speech	7	1.1
Lead Exposure/Toxicity	1	0.2
Tuberculosis Exposure	4	0.6
Surgical	1	0.2

[a]Based on all children with problem sheets (n=636).

category with the next highest frequency of children is "Dentition" (31.4%). This includes those children for whom single or multiple dental conditions were specified (e.g., caries, malocclusion). Other high categories include "Vision" (22.8%), "Ears" (18.9%), and "Hearing" (16.0%). The total number of children examined is too small to obtain reliable estimates of problem prevalences, and so meaningful comparisons with reference data for specific prevalences are difficult.

Frequencies of children with the most common specific problems within the above categories are presented in Table 5-4. Six of the eight chief problems represent health care needs; the exceptions are "Specified Dental Conditions" (caries, malocclusion, abscess and others combined), and "Developmental Problems." It is likely that the actual number of children with developmental problems is considerably underestimated because few neuro-developmental screens were given during this period.

Table 5-4

Frequencies of School Children
With Most Common Specific Problems

Problem	Percent of Children[a]
Specified Dental Conditions	31.4
Needs Dentist	30.3
Needs Primary Care M.D.	24.3
Incomplete Immunizations	22.9
Needs Special Services	19.3
No Vision Exam Record	14.0
No Hearing Exam Record	12.7
Developmental Problems	7.8

[a]Based on all children with problem sheets (n=637).

The problem of "Needs Special Services" refers to a variety of needs (e.g., new glasses, parent counseling, new hearing aid). It is striking that over 24 percent of the children need a primary care physician, and over 30 percent need a dentist.

All problems were classified post hoc into one of three general types: organic, functional/psychosocial, and health care. The examining nurse practitioners also designated whether each problem was referrable, whether it had been previously detected or diagnosed, and the severity of the problem. Unfortunately, for these latter three parameters there was considerable missing data (about 40%) and no firm conclusions can be drawn from available data. By combining the nurse's designation with the post hoc classification, however, the general nature of the problems identified can be described (Table 5-5).

Over 92 percent of the school children had a least one problem, with almost three-fourths of the children having organic problems and over two-thirds having problems with health care. Because of the amount of missing data, the estimates of frequencies of children with referrable problems may be underestimates of the actual rates. Based on the available data, approximately 80 percent of the children had problems that required referral to resources other than parents, with the problems approximately equally divided between organic and health care problems.

With about 40 percent missing data, approximately 18 percent of the children examined presented problems that had previously been undiagnosed or undetected, and almost all of these were organic in nature (not in Table 5-5). This is an important statistic relating to

Table 5-5

Frequencies of School Children With Problems Noted and Types of Problems

Problem Type	Number of Children	Percent of Children[a]
All Problems	589	92.6
Organic	472	74.2
Functional/ Psychosocial	81	12.7
Health Care	434	68.2
Referrable Problems	503	79.1[b]
Organic	356	56.0
Functional/ Psychosocial	26	4.1
Health Care	328	51.6

[a]Percent based on all children with problem sheets (n=636)

[b]Calculated as other percentages but a moderately large proportion of cases (14.7%) had missing data on this item.

the efficiency of the program in detecting new problems. Nevertheless, because of the rate of missing data, this cannot be considered a reliable estimate. The available data indicate that there were children with serious problems and even fewer with severe, previously undiagnosed problems or referrable, severe, previously undiagnosed problems.

Consequently, even without precise estimates, one can say that even though a large proportion of the children have problems identified, a very small percentage (perhaps less than 1%) of the children will have serious problems that have previously gone unidentified. The nature of the pediatric problems identified in LCHP and similar widely based screening programs in this country is important to understand when setting goals and objectives for such programs.

Occurrences of problems in three categories were used as general indicators of health, and possible associations with a wide variety of variables were investigated. The significance of associations was determined by chi-squared analyses for categorical variables and by Spearman rank correlation coefficients for ordinal or continuous data. The three problem categories were: referrable organic problems, referrable health care problems, and previously undiagnosed problems. These three categories of problems were chosen because of their relative importance and because there was sufficient variance in the population to provide meaningful estimates of associations.

A higher proportion of children who live in housing projects have referrable organic problems, compared to those who live in rented or owned houses (Table 5-6). Among those children who use private offices or clinics for their primary sources of pediatric care there is a lower frequency of referrable organic problems than among those who use emergency rooms or other sources.

The significant associations with occurrence of referrable health care problems are presented in Table 5-7. Many of the significant relationships are those

Table 5-6

Summary of Significant Associations With Occurence of Referrable Organic Problems in School Children

Variable	Significance of Association	Nature of Association
Dwelling Type	*	A higher frequency of children with problems live in projects compared to those who live in rented or owned houses.
Source of Primary Pediatric Care	**	A lower frequency of children with problems use private offices or clinics than those who use emergency rooms or other sources.

*p<0.05

**p<0.01

directly related to health care needs, and would be expected (primary source of pediatric care, times since last physical and dental examinations, regular dental care). Three of the significant associations relate to social/demographic factors which are apparently barriers to acquiring health care: rural birth and non-English speaking status (these two factors contribute to membership in the Demographic risk group); and single-parent household. Interestingly, children with referrable health care problems tend to be older than those without problems.

Table 5-8 presents the significant associations with occurrence of previously undiagnosed problems in the school children. It will be recalled that 40 percent of the cases had missing data for this item. There are

Table 5-7

Summary of Significant Associations With Occurrence of Referrable Health Care Problems in School Children

Variable	Significance of Association	Nature of Association
Age	***	Children with problems tend to be older than those without problems.
Child's Birth Place	**	A higher frequency of children with problems were born in in rural areas compared to those born in urban or suburban settings.
First Language Spoken	*	A higher frequency of children with problems speak Spanish or other languages compared to those who Speak English.
Primary Source of Pediatric Care	***	A higher frequency of children with problems who report emergency rooms as primary source compared to private offices, clinics and other sources.
Satisfaction with Relationship with Primary Provider of Pediatric Care	**	A higher frequency of children with problems among those who are not satisfied compared to those who are somewhat or very
Demographic Risk Group	**	Children with problems tend to be those at demographic risk.
Time Since Last Physical Exam	***	Children with problems tend to have longer times since previous examinations.
Time Since Last Dental Exam	**	Children with problems tend to have longer times since previous examinations.
Regular Dental Care	***	A higher frequency of children with problems report not having regular dental care.
Primary Caretaker	*	A higher frequency of children at risk are from single-parent households than from two-parent households.

*$p<0.05$

**$p<0.01$

***$p<0.001$

Table 5-8

Summary of Significant Associations With Occurrence of Previously Undiagnosed Problems in School Children

Variable	Significance of Association	Nature of Association
Ethnicity	*	A higher frequency of black and Hispanic children with problems than white or other children.
Dwelling Type	***	A higher frequency of children with problems who live in projects compared to those who live in rented or owned houses.
Child's Birth Place	***	A higher frequency of children with problems among those born in suburban areas compared to those born in rural or urban areas.
Number of Moves in Last Three Years	**	Children with problems tend to be those who have moved more frequently.
Routine Well-Child Care	*	A higher frequency of children with problems among those who do not receive routine care.

*$p<0.05$

**$p<0.01$

***$p<0.001$

higher proportions of black and Hispanic children with these problems than white or other children. Children with these problems tend to live in housing projects and to have moved more frequently in the past three years than children without undiagnosed problems. It is not surprising therefore that children with these problems are also those who do not receive routine well-child care.

While some of the associations between problems and demographic and service utilization variables are not surprising, it is meaningful to document these relationships. In this community, and perhaps elsewhere, these variables should be included in efforts to devise criteria for selective screening or triage.

It is clear from the results presented in this chapter that the LCHP population is in need of health services. Moreover, as part of the program, a significant proportion of children were referred and connected with health care providers. Because the efficacy of referral cannot be evaluated at present we do not know the eventual status of problems referred to other providers. It is unlikely that any children's lives were saved because of the LCHP. Nevertheless, to the extent that participation in regular health care improves the quality of present and subsequent life for children, the importance of the LCHP cannot be doubted.

Chapter 6
MAJOR CONCLUSIONS AND LESSONS LEARNED

In the course of a project of this nature, much effort is expended in organizational and logistical exercises. Thus, some important conclusions may be operational, while others may be linked to specific project goals. The intent of this chapter is to summarize broad conclusions drawn from across many aspects of the project and, where appro priate, to present more specific lessons learned. Of course, lessons are learned because of negative experiences as well as successes. Accordingly, recognition of program limitations is important for insightful evaluation and for future planning. Conclusions and lessons learned reported here have been selected because they have broad applicability to brokering and to other important aspects of children's health.

1. There are communities of children in Massachusetts (and elsewhere in the U.S.) who need improved health services.

Though this conclusion may appear an obvious statement to many, there are policy-makers who do not acknowledge this fact. Findings in Chapters 4 and 5 demonstrate clearly that LCHP children at first examination had large needs related to their health. Many of these needs are probably concomitants of poverty, which is prevalent in this population. Nevertheless, it is apparent that in this community, traditional health care delivery systems have been insufficient to meet clearly evident needs. Moreover, to invoke poverty as a reason for these health needs is to beg the issue: poverty may be a contributing cause of the needs, but poverty is not why the needs have remained unmet.

2. There is a need for brokering or some other coordination of services to provide systematic screening and referral of children and to assist families in obtaining health services.

This conclusion is predicated upon the first and is a basic premise of the project--a premise that was validated by the project's experience. Many families need assistance to gain access to health resources. Barriers to access include cultural and language differences, but often health promotion through parent education and motivation is a critical factor in overcoming these barriers. Conventional models of health services for poor children are based on fragmented categorical programs, and thus a program that provides coordination of services increases the effectiveness and efficiency of those programs.

One of the lessons learned in this regard was that often the adults in the families also needed to be linked to available services. Therefore, it was important that family health workers be aware of services for all members of the family, and not for children only.

3. The LCHP collaborative brokering approach has been successful in increasing access to EPSDT services for both Medicaid-eligible children and other children.

Over the course of the project 72 percent of the school children in participating schools actually obtained comprehensive preventive health screening services. This amounted to examinations of 1982 children. National estimates for 1975 and 1976 indicate between 22 and 26 percent of the screenings needed by eligible children were

carried out (Children's Defense Fund, 1977). For 1979, the year prior to the initiation of the LCHP, about 6 percent of the screenings needed by eligible children in the Lawrence area were carried out. The estimate of screenings needed is based on recommendations from the American Academy of Pediatrics for children within risk and age groups. Though children who are not eligible for EPSDT (and hence presumably are better off) may not have the prevalence of health problems that poor children do, we agree with the American Academy of Pediatrics that preventive health services are required for all children. We have no documentation of the extent of coverage of preventive services for children who were not eligible for EPSDT in Lawrence prior to the LCHP.

Through the LCHP experience, it became apparent that some families who are not eligible for EPSDT and who carry no commercial health insurance simply cannot afford to pay for necessary services. At present, there is no mechanism outside of the project's funds to ensure that these children receive adequate care.

4. The school is an effective site for reaching children and for providing and brokering health screening to large numbers of children.

That 72 percent of the children enrolled in school were screened is striking documentation of this conclusion. Using schools as sites is not without problems: in some areas, school truancy is a considerable problem, and it is likely that these children and youth have special health needs. Moreover, frequent family relocation may cause loss or interrupted contact with

children. Nevertheless, for the vast majority of children, school provides much improved access compared to conventional health delivery models. The veracity of this conclusion is based on the premise that a successful collaborative arrangement has been established among brokers, educators, and health providers. The LCHP has demonstrated that such collaboration is possible and productive.

In addition, a summer screening program conducted by the LCHP demonstrated that a certain portion of the preschool population could be reached through a school-based program. This potential is important to document given requirements of P.L. 94-142 nationally and Chapter 766 in Massachusetts regarding identification and follow-up of special-needs preschool children. There is no documentation of the proportion of eligible preschool children that were screened through LCHP.

An important lesson learned was that a clear benefit of school involvement is increasing educators' awareness of health issues and the relationship of children's health with their school performance and their overall well-being. Moreover, as educators become more familiar with community resources, the school becomes more integrated into other community services, and additional advocates for child health in the community are won.

5. A collaboration among existing agencies, organizations, and providers suitable for brokering health care for children is feasible and has been established.

The Merrimack Education Center has been successful in establishing working relationships with the Massachusetts Department of Public Welfare, which administers EPSDT (Project Good Health) for the State; the U.S. Health Care Financing Administration; Boston Children's Hospital Medical Center; the Lawrence Public Schools; the Greater Lawrence Dental Society; the Sickle Cell Center of the Boston Department of Health and Hospitals; and many local health providers and organizations. A more detailed account of specific collaborative accomplishments with other organizations is included in Chapter 5. It may be argued that application of the LCHP model on a large-scale basis would require certain structural modifications in state agencies; nevertheless, the LCHP has demonstrated that effective referral networks can be established and that social and public organizations can be integrated into the overall program. The result of this organizational collaboration has been a child-centered program for the delivery of necessary services--that is, a system of services adapted to local children's needs. Families no longer must struggle alone to meet personal needs according to availability of categorial services.

Another lesson learned was that it is often important to establish links with organizations through personal associations with individuals in important roles within those organizations. These personal associations do not have to be of long standing, but it is important to identify someone in the organization who can act as an advocate for the collaborative arrangement. In other situations, the broker may take the only active role and collaborating organizations may only need to provide initial assent.

6. The brokering model can (must) be adapted to local needs and resources.

In the purest sense, the brokering of children's health care does not involve provision of services. In this regard, the LCHP was not a model strictly limited to brokering, because screenings were carried out through the project. The decision to provide services was made because corresponding services were not available on a regular basis by local providers. One of the important collaborative adaptations that the LCHP made was to become approved with the Massachusetts Department of Public Welfare as a partial provider of Medicaid/EPSDT services. This allowed the project to bill the state directly for reimbursement of LCHP services. One might argue that the involvement of the broker in direct provision of services should be a last resort, when no corresponding services are available. Nevertheless, it is important to recognize the model's ability to adapt to slightly different roles when necessary. The overriding concern is that children receive the services they need.

An important adaptation by the LCHP was to have a van that provided mobile services. The van was a visible advertisement for the project, and because of the van, school officials perceived the program as less invasive and less threatening. Use of the van was eventually phased out and permanent space in the schools was provided.

A problem which LCHP has not yet solved is that within existing school resources, there is no mechanism to accommodate and follow the increased number of newly identified problems relating to behavior or neurodevelopmental concerns that require regular educational

monitoring and management. A project like LCHP will identify more children with special health needs than previously recognized, and considerable strain on local resources and programs may result.

7. Brokering special health needs of groups of children may provide special services generally unavailable to individual families and children.

Because the broker serves a relatively large population of children, he is able to identify groups of children or families with the same or related needs. Especially when the health problems are relatively rare, individual families may have difficulty in obtaining specialized services.

An example of this type of group brokering by the LCHP occurred with children identified as having the sickle cell trait. LCHP made arrangements with the Sickle Cell Center of the Boston Department of Health and Hospitals for individual family counseling and screening of family members in Lawrence. Without this group brokering, individuals would have had to travel to Boston for these services, if the children had been otherwise identified and if the families had been aware of the services. Such a group brokering effort is a service that no other local provider offers.

The benefits of group brokering extend to providers also. The provider knows that real health problems exist when the broker makes referrals, and he has confidence in the organizational follow-up that the LCHP provides. Associations between LCHP and providers are regular and long-term and transcend individual associations, even if these are amiable.

8. The LCHP collaborative brokering approach has improved health services for children through increased comprehensiveness, more efficient utilization of existing services, and integration and coordination of new and existing services.

This is a very encompassing conclusion, and each component of improvement could be considered a major conclusion in itself. The issue of improved access to care has been addressed previously (Conclusion 3). Services have also been made more comprehensive. The detailed health histories and physical examinations, for example, go far beyond recommendations of EPSDT (Frakenburg and North, 1974). Similarly, the neuro-developmental examination used during the first months of the project is an extensive diagnostic tool by any standard. (During the latter period of the project, neuro-developmental examinations were only given to selected individuals). Services provided by the family caseworker in terms of personal contact, parent education, advocacy, and linkage to providers add considerably to the comprehensiveness of child health services.

In Chapter 5 it was reported that almost 70 percent of all the children examined initially had problems related to health care. Review of case records showed that only in approximately 6 percent of closed cases did parents refuse to respond to LCHP recommendations or move out of the school district before the referral process could be completed. Clearly, this represents improved utilization of existing services. Because needs for services were coordinated through a single organization, redundancy in services was kept to a minimum.

As LCHP developed, the project played an increasing role in the management of school health programs within the school district. For the coming year, the LCHP has contracts with the Lawrence Public Schools to monitor immunization status, and conduct vision and hearing screens for all children. The LCHP demonstrated that central computerization and updating of school health records can be achieved with minimal capital outlay. This allows maximum flexibility in identifying needs of children and in monitoring the referral process.

Throughout this report, references have been made to organizational and group relationships that reflect the extent of cooperation achieved by the LCHP. That LCHP took the leading role in coordinating services and resources according to the needs of individuals and groups with special medical concerns is exemplary of the brokering role.

9. A project support team of nurse practitioner and para-professional family health worker appears to be a successful approach to providing families with the assistance they need.

Although a pediatric fellow is a crucial element in the LCHP's services, the project is not based on a physician-centered model. The nurse practitioners were effective and accurate in their diagnoses, and showed sincere interest in the project and its approach. The LCHP experience supports the notion that nurse practitioners can be cost-effective and appropriate physician-extenders. The choice to have a para-professional family health worker who is other than the examining nurse practitioner was made largely for economic and logistic

reasons. One might argue that patient care within the project is divided too much for maximal continuity of care for the individual. Each child or family meets with the health worker, and the nurse practitioner, in addition to specialized referral providers, school nurses and primary providers for medical and dental needs.

The experience of LCHP suggests that the team's functions must include personal contact with families of children. This contact may take the form of calls and/or home visits to enlist enrollments and permissions, to collect histories, to coordinate referrals and treatment, and to motivate and educate families. An example of the effect of repeat parent contact is presented in Chapter 4 regarding success in enrollment. This important function of contact with the family requries bicultural and bilingual workers when certain ethnic populations are involved.

10. LCHP has demonstrated that collaborative brokering of children's health care can be coupled with school-based EPSDT services as a realistic alternative to conventional models of health service delivery for children.

While many aspects of the LCHP were not evaluated in a formal sense, it is clear from available information that in many ways the project was a success. Because the LCHP was designed as a demonstration, many conclusions are based on qualitative rather than quantitative observations. This demonstration must be viewed as a success, because many aspects of the project merit further consideration and suggest great potential for replication and modification elsewhere. Specific recommendations for the program's future and some of the implications of this project for child health policy are presented in the following chapters.

Chapter 7
RECOMMENDATIONS FOR THE FUTURE

Most of these recommendations are couched in terms of substantive directions for the future, rather than as specific operational adjustments. Some of the recommendations cannot be carried out directly by the Merrimack Education Center, but may require state or regional initiation by various groups and agencies. Other recommendations may be applicable to future permutations of projects like LCHP.

1. Selected program elements from LCHP should be replicated elsewhere.

Pilot studies to determine the feasibility of applying and modifying the LCHP model should be carried out. These pilots should include planned variation in program elements, or sites should be chosen that demand specific program adaptations. It is important to learn which of the LCHP successes and drawbacks are idiosyncratic and which are widely applicable. One must conclude from the LCHP experience that there are many aspects of the project that merit serious consideration by administrators, planners, and policy-makers.

2. A school-based brokering model should be designed and implemented in a way to accommodate rigorous evaluation of the project.

Substantive concerns for such an evaluation effort may include: impact on children's health and functioning; impact on health services for individual children

and communities; cost-effectiveness; effectiveness of screening activities; impact on schools and teachers; effectiveness of brokering organizational and group collaboration; community and state relations; and political dynamics. Organizing a project suitable for evaluation is a considerable task and requires that technical expertise from a wide range of disciplines be involved from the earliest planning stages.

3. An in-depth study of the internal mechanisms of state and local government dealing with EPSDT/Medicaid and other children's health services should be carried out to determine agency restrictions and politics pertinent to establishing local brokering organizations for children's health services.

Much of the practicability and success of innovative concepts, such as the LCHP, depends on advocacy in government and ability and willingness of government to adapt to new needs imposed by such programs. Perhaps this study may include a workshop with representatives from state and local interests to identify perceptions, problems, advantages, structural concerns of organizations and policy implications relating to establishment of local brokering organizations. While such a study could be part of a comprehensive evaluation effort (Recommendation 2), it has been set apart here because of its critical role in determining the future for models like the LCHP.

4. A mechanism should be developed for the model to provide self-sustaining financial support for project administration, case workers, comprehensive care, and maintain a surplus.

The LCHP presently covers administrative costs and salaries of case workers (not reimbursable expenses) through project grant funds and with the marginal savings of reimbursements for performing examinations on children. The model's viability for the future will, in part, depend on its ability to be self-sustaining financially. A financial surplus is important to provide flexibility to operations and the ability to withstand short-term setbacks. It is possible that a mechanism for financial support will come from governmental revision of policies, but it is unlikely that this would be a first step. Financially, the LCHP model is fragile, and progressive streamlining of the services based on financial considerations alone will strip it of the comprehensive and innovative features that set it apart. A follow-up on these aspects of the LCHP after the ensuing year of operation would be most informative in this regard.

5. A system of pre-screening or triage should be considered to provide basic services for all children but reserve the most specialized services for those in need.

Comprehensiveness of services does not require that all children receive all services. Devising a system of triage will be more efficient financially and will support high-quality care for all children. The criteria for this system may differ from one population to another, but designing a sensitive instrument should be part of the initiation of program protocols. Accommodating priority children should be incorporated within the project organization. It is more important that the triage criteria be very sensitive (i.e., include some false positives) than that they be very specific (i.e., include few false negatives). This will ensure balancing the services in favor of the children who may be in need.

6. Through organizational collaboration, a mechanism should be established for incorporating project findings into planning future directions for schools, school health, and community services.

Complete integration of services encompasses the planning process. Effective application of the collaborative brokering model allows its administrators to be acutely aware of the health status and health needs of children and of the resources that are available. This comprehensive knowledge is critical for effective planning in the community. Moreover, if any improvement is to occur within communities in meeting the needs of children locally, such information is critical. It is also important to secure a place for child health advocacy in the community planning process. Such a role demands establishment of formal lines of communication and mechanisms for feedback between the broker and others involved in the planning process. In a similar fashion, the collaborative brokering model provides a source of important information for state and regional planning.

7. Educational and training activities for teachers, parents, and community leaders should receive considerable attention.

The brokering must take an active role to initiate and facilitate cooperative agreements towards improvement of children's health. Acceptance of innovative programs, as well as subsequent advocacy by individuals who administer and participate in service organizations, requires well-conceived presentations and, at times, formal training sessions concerning goals, directions, and operational details.

The broker may initiate changes within organizations to provide support for regular training. For example, it may be appropriate for a school principal to assume active participation as an instructional leader for his teachers. This organization may lead to a case-oriented school team approach to manage children with special needs and provide a forum for in-service training.

Many community leaders, other than those associated with health provision per se, may be important contributors to community support for the brokering effort. Local social organizations and clubs may contribute or raise funds for the brokering effort. Local social organizations and clubs may support efforts financially or raise funds, provide space, or offer forums for community education. These kinds of activities, in turn, develop local political support and visibility for the collaborative brokering effort.

Chapter 8
POLICY IMPLICATIONS FOR THE FUTURE

The LCHP experience and some basic conclusions based on this demonstration (Chapter 6) have implications for policy concerning public child health services. Moreover, some aspects of LCHP and the collaborative brokering model have implications for the structure and mechanism of health delivery systems on the local and state levels. The LCHP experience may be useful in framing and adapting programs and for suggesting innovative and alternative solutions to various health care problems.

Clearly, one's perception of the usefulness of a particular aspect of the LCHP for future endeavor depends greatly on one's perspective and locus relative to child health services. Thus, there are many more implications and applications of the LCHP's experience than are presented here. The purpose of this chapter is to outline selected central implications of the LCHP demonstration for child health policy and directions for the future. Of course, the basic implications often could be developed and expanded beyond the bounds required for a concise report.

1. The collaborative brokering model offers a mechanism for increasing efficiency of existing services.

Recent federal cuts in public programs have been accompanied by state initiatives to limit taxation (Proposition 13 in California and Proposition 2 1/2 in Massachusetts). Clearly, there is an atmosphere nationwide of reduced spending, and a large portion of this zeal is directed at public health and education services. Given

this environment, policy-makers should be interested in a mechanism to maximize effectiveness of existing services, minimize redundancy of services, and to improve quality of services at the local level. The LCHP experience suggests that the collaborative brokering model may have elements contributive to such increased efficiency. The fact that the LCHP has provided additional services at the same reimbursed rate as screenings alone attests to cost-effectiveness of the LHCP model.

It is unclear whether the model is appropriate everywhere; it probably is not. The model will be most effective in areas with large populations of low-income children. But again, these areas are the primary concern of most public service programs. On the other hand, a collaborative brokering approach may be applied almost everywhere, although in better-off areas, collaborative emphasis would probably be on coordination of available private and community services and less of government entitlement agencies.

2. The collaborative brokering model may offer a mechanism for increased responsiveness to local health needs and for formalized communication channels with state and regional officials.

The broker becomes extremely knowledgeable about local health status, needs, and resources. A primary function is to match needs to available resources. Theoretically, the brokering model should approach a market exchange system for health care delivery on the local level, such that providers would compete for clients made available through the broker. Because the clients in this case will largely be Medicaid-eligible children, the market will not cover the entire community and thus the sys-

tem will remain open to some extent. Nevertheless, for providers serving Medicaid-eligible clients, the exchange system should hold. The results should be an adaptation of resources (existing or newly generated) to local needs.

The broker is in a unique position to regularly provide state officials with comprehensive information and other feedback essential to planning, and can act as an advocate for local needs. On the local level, the comprehensive perspective of the broker would be indispensable to community planners.

3. Widespread collaborative brokering of child health services may demand some changes in local and state government agencies.

If the brokering model were widely implemented, it is likely that, over time, certain changes in agencies' policy and structure would occur. These changes may or may not be considered attractive by policy-makers.

There are some in government who may feel that the brokering function should be assumed by the government. Over time, interagency collaboration may need to be formalized and accomodated by organizational structure. If there is a commitment to make local collaborative brokering financially strong, there may need to be revisions of funding and reimbursement policies. Involvement of collaborative brokers in formal reporting and planning would necessitate incorporation of these aspects into existing systems. Systematic integration of services on the local level may have implications for organizations of categorical programs at higher levels. Overall, it is naive to suppose that successful implementation of the collaborative brokering model on a large scale would not

have some impact on higher levels of community and state organizations.

4. The collaborative school-based EPSDT model has implications for reordering school health.

In some environments, the role of school nurse has become largely clerical, monitoring immunization status, and vision and hearing screens. A school-based model that integrates EPSDT with school health has considerable implication for the nature of school health as well as the role of the school nurse. In this model, school health will become much more comprehensive and a more apparent community resource. With the school health program as a point of access to children and families, it is likely that other community health programs would be articulated with the school-based ones. Within an integrated program it may be appropriate for the school nurse to fill the role of a family health worker, or she may be replaced with a nurse practioner.

In other areas, where there is an active school health program, it may be that the bulk of the new activities can be absorbed into existing programs. Certainly, there would be considerable variation in the degree of modification of school health programs.

5. The school-based model provides a source of direct access to families for preventive care.

It is known that preventive services customarily must depend upon curative care to draw in patients and families. As a rule, people only seek health care voluntarily when specific diagnoses and treatments are con-

sidered necessary. This is especially true for poor people. A school-based model has the potential of reaching nearly all school children, and through family case workers, a high percentage of families, or at least some family members. The LCHP experience showed that after rapport had been established with families, there was considerable interest in obtaining preventive services for other members of the family (e.g., hypertension screening for adults, screens for preschool children). If the national emphasis is shifting toward health promotion and disease prevention (Surgeon General, 1979), it is important to recognize the added potential of the school-based model.

6. The existence of a controlled, systematic approach for providing preventive health services to large numbers of children may lead to acceptance of these services for reimbursement by private insurance carriers.

Traditionally, private insurers have not covered preventive services. Presumably, among the reasons for this are that it is difficult to control usage of such services, and that frequency and extent of usage of these services are difficult to predict. It is likely that insurers feel preventive services are not cost-effective, and historically these services have not been covered.

The school-based brokering model has great potential for providing control and predictability to preventive health care for children. Moreover, it is clear that many preventive services are cost-effective (Select Panel, 1981).

Private insurance companies respond to the demands of their clients. A large share of the clientele

consists of employees who carry group health insurance for their employees. If the model were successfully implemented, insurance companies might be approached through local business coalitions to expand coverages with some assurances for control that have been unavailable previously. If such an effort were successful, the school-based model could be extended to cover services for all privately insured children also, providing for considerably improved financial stability for the preventive care and perhaps for the brokering effort.

7. The collaborative brokering, school-based model is a potential mechanism for providing preventive health and comprehensive health services to nearly all children of school age.

Politicians argue as to whether all children have a right to be healthy. For those who favor such rights, it is important to establish that elements of the collaborative brokering, school-based model may provide a mechanism for providing preventive health and comprehensive health service to nearly all children of school age. Although the basic model has placed emphasis on EPSDT and associated services for low-income children, access through school and brokering of care can extend to all children. Even children with private insurance and private providers can benefit from being routed to appropriate services, and from group brokering activities. To the degree that school truancy exists, children would be outside of the system. Nevertheless, school would provide a legally mandated link with all children of appropriate age. For travelling schools associated with streams of migrant children, special adaptations would have to be made, but the school contact still would have been established.

For policy-makers who feel that only certain children have a right to be healthy, based on private initiatives or through other resources, the model still provides a point of regular access for children and families, and ensures high-quality care.

APPENDIX A
SUPPLEMENTARY TABLES

Table A-1

Factors Included in Risk Groups

Medical Care Risk - Child is at risk if one or more of the following is checked:

- has no clinic or private doctor
- mother received no prenatal care, or none prior to third trimester
- last physical or dental examination occurred more than 15 months ago

Demographic Risk - Child is at risk if three or more of the following are checked:

- number in household is 7 or more
- has moved three or more times in past three years
- speaks a language other than English
- mother's education is below 8th grade
- both parents do not live in the home
- child was born in a rural location

Medical History Risk - Child is at risk if three or more of the following are checked:

- gestation age below 8.5 months, or birthweight is less than 6.0 lbs
- vision disorders in the past or present or has seen an ear, nose or throat specialist in the past or present
- ear infections in the past or present
- kidney/urinary tract infections in the past or present
- anemia in the past or present
- seizures, concussions or epilepsy in the past or present
- asthma in the past or present
- previous hospitalizations
- previous surgery

Physical Findings Risk - Child is at risk if four or more of the following are checked:

- height is equal to or below 5th percentile (NCHS percentiles)
- weight is equal to or below 5th percentile, or equal to or above 95th percentile (NCHS percentiles)
- systolic blood pressure is elevated for age
- diastolic blood pressure is elevated for age
- hematocrit is below normal for age
- physical findings in any of the following areas (each receives one point):

  pre-postnatal health, family health, social health, accidents, previous health, school functioning problem, growth, integument, ears, eyes, neck, nose or throat, breasts, respiratory system, cardiovascular system, gastrointestinal system, genitourinary system, musculoskeletal system, neurology, endocrine system, nutrition, dentition, vision, hearing, health care, developmental, hygiene, allergy, psychological health, speech, systemic disorders, lead poisoning, TB, surgical indication

Table A-2

Problem Codes

Types

1. Organic
2. Functional/Psychosocial
3. Health Care

Specific Conditions

01.0 Prenatal/postnatal

02.0 Family Health

03.0 Social Health

04.0 Accidents or Injury
   1. Possible Abuse

05.0 Previous Health Problems

06.0 School Function

07.0 General Growth
   1. Underweight
   2. Short Stature
   3. Obesity

08.0 Integument
   1. Dryness
   2. Eczema/dermatitis
   3. Fungal Infection
   4. Swellings/Masses

09.0 Eyes
   1. Strabismus
   2. Conjunctivitis
   3. Amblyopia/Trophias

10.0 Ears
   1. Acute OM
   2. Serous OM
   3. Recurrent OM
   4. Foreign Body/Cerumen
   5. Abnormal Tympanogram
   6. Abnormal TM

11.0 Nose, Mouth, Throat, Neck
   1. Pharyngitis
   2. Tonsilitis
   3. Adenitis
   4. Adneoiditis
   5. Tongue Tied

12.0 Breasts

13.0 Respiratory
   1. URI
   2. Asthma
   3. LRI

14.0 Cardiovascular
   1. Murmur
   2. Hypertension

15.0 Gastrointestinal
   1. Diarrhea
   2. Constipation
   3. Parasites

16.0 Urogenital
   1. Infections
   2. Congenital Anomaly
   3. Vaginitis/Discharge
   4. Phimosis

17.0 Musculoskeletal
   1. Spine (lordosis etc.)
   2. Arthritis
   3. Congenital

18.0 Neurological
   1. Nystagmus
   2. Ptosis
   3. Seizures
   4. Headache

19.0 Endocrine
   1. Thyroid

20.0 Nutrition
   1. Anemia

21.0 Dentition
   1. Caries
   2. Malocclusion
   3. Abcess

22.0 Vision
   1. No Exam
   2. Failed Exam
   3. Reported Problems

23.0 Hearing
   1. No Exam
   2. Failed Exam
   3. Reported Problems

24.0 Health Care
   1. Primary Care MD

25.0 Developmental
   1. Minor Neurological
   2. Temporal Sequential
   3. Visual-Spatial
   4. Auditory-Language
   5. Fine Motor
   6 Gross Motor
   7. Memory
   8. Attention-Activity
   9. Enurisis
   10. Encopresis

26.0 Hygiene

27.0 Allergies

28.0 Psychological/Behavioral/Emotional

29.0 Speech

30.0 Systemic Diseases

31.0 Lead

32.0 TB-Tine

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